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Borough of Dewsbury.

REPORT

UPON AN

EPIDEMIC OF SMALL-POX

IN THE BOROUGH OF DEWSBURY
IN 1904.

BY

J. SPENCER LOW,

Late ~~*M.B., Ch.B.,*~~ *B.Sc., D.P.H., Barrister-at-Law,*
MEDICAL OFFICER OF HEALTH.

WITH A

REPORT UPON THE SMALL-POX HOSPITAL,

BY

E. MAYNARD ASHCROFT,

M.B., Ch.B., D.P.H.,
RESIDENT MEDICAL OFFICER.

DEWSBURY:
JOSEPH WARD & CO., CAXTON SQUARE, CHURCH STREET.

1905.

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1905.

TOWN HALL,
DEWSBURY,
30th April, 1905.

To the Chairman and Members of the Sanitary Committee of the Borough of Dewsbury.

GENTLEMEN,

In presenting my Report to you upon the recent epidemic of small-pox in Dewsbury, I should like, first of all, to explain its scope.

As far as the figures and the particulars of the cases are concerned, I have dealt with all the cases which occurred during the whole epidemic, after collecting as much information as possible. As far as preventive measures are concerned, I have only dealt with those which have been carried out under my control since I came to Dewsbury, in October, 1904.

Some general considerations are given on the subject of vaccination on account of the misapprehension and misrepresentation which prevail on this point. I am not aware that anything which could be fairly urged from the anti-vaccination point of view has been omitted.

The last section of the Report, dealing with the Hospital, has been written by Dr. E. M. Ashcroft.

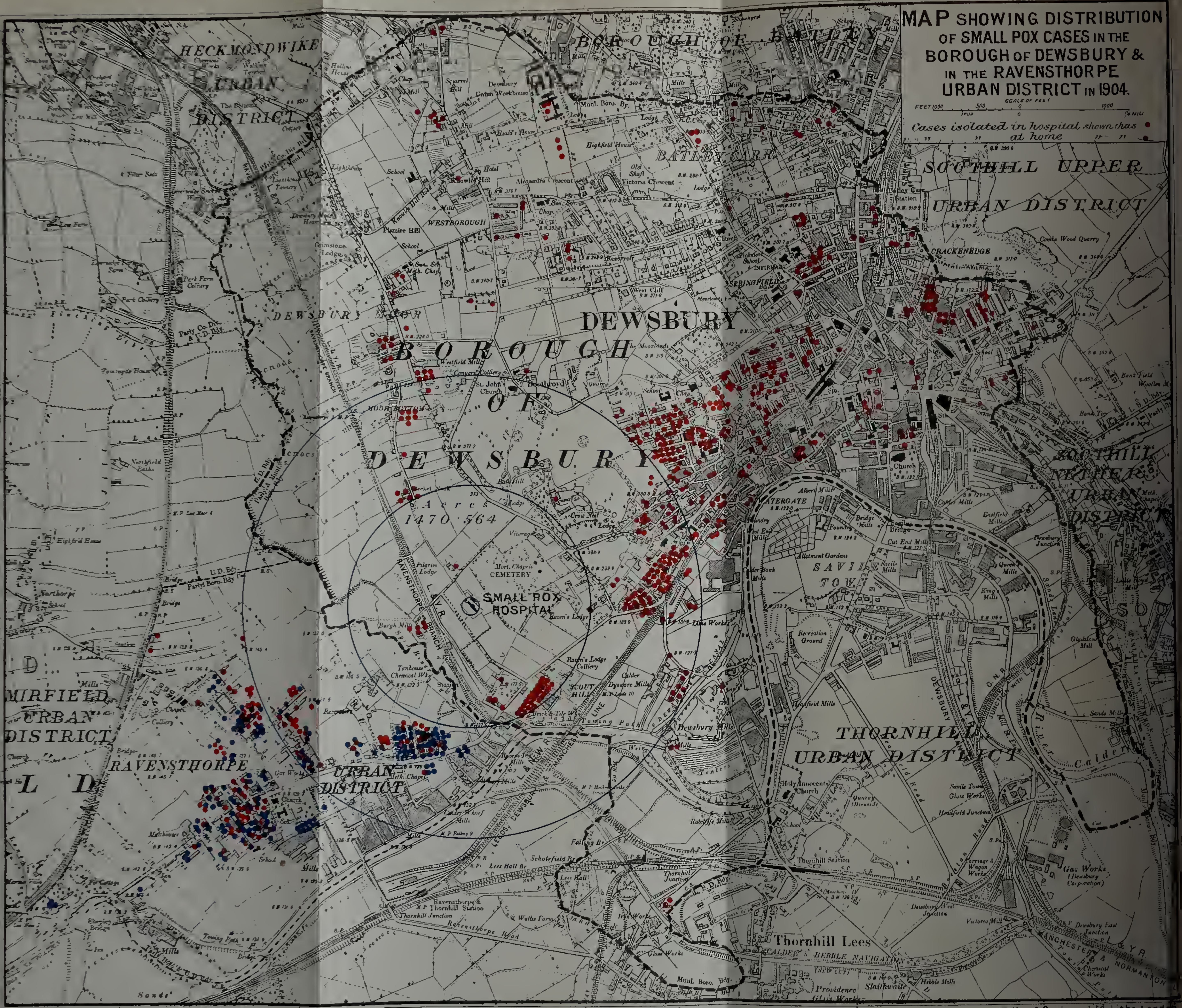
I am glad to take this opportunity of thanking you for the cordial manner in which you have supported every preventive measure which I have suggested to you. Without such support I doubt whether I should now be in a position to report upon the epidemic as a thing of the past. Perhaps consideration of some of the points to which attention is drawn in this Report may influence the future behaviour of small-pox in the Borough.

The measures taken, though described at some length, consist of those usually employed where a determined effort is made to subjugate an outbreak of small-pox. I should not like it to be inferred that any claims for introducing any original measure are put forward.

I have the honour to be, Gentlemen,

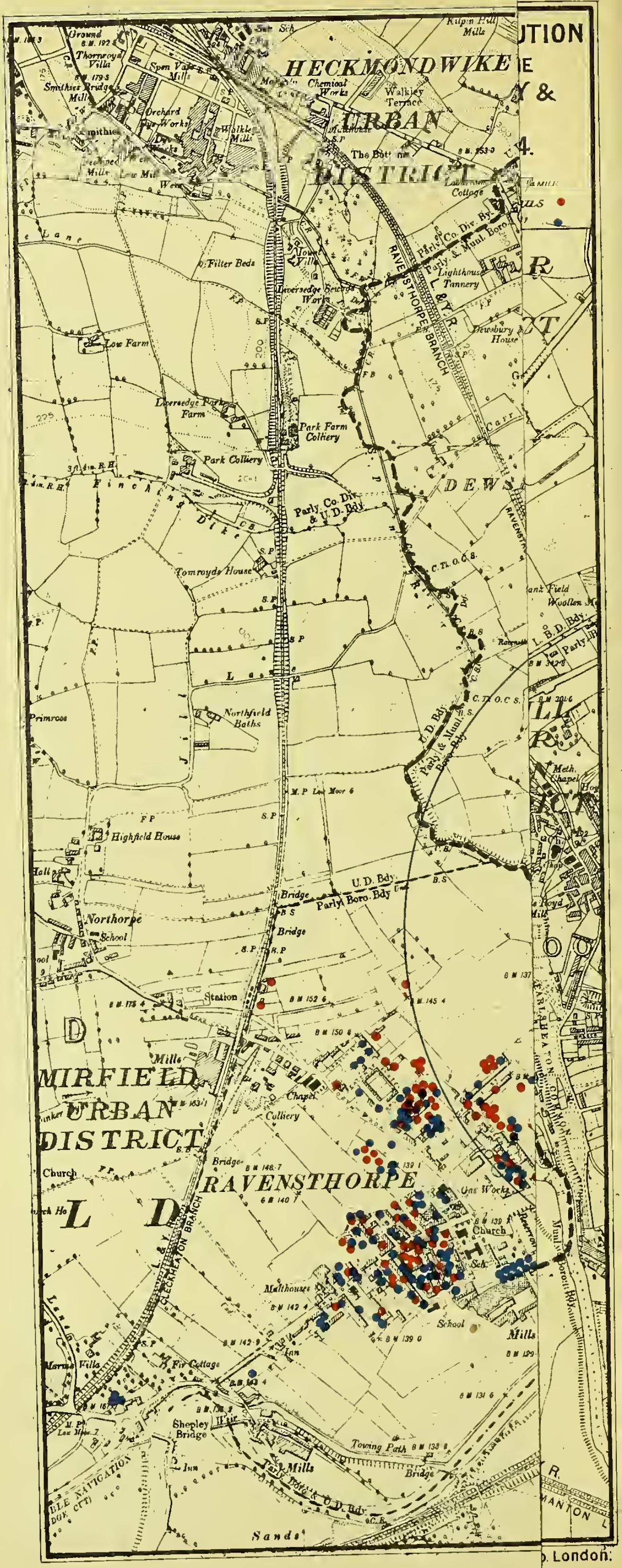
Your obedient Servant,

J. SPENCER LOW.



MAP SHOWING DISTRIBUTION OF SMALL POX CASES IN THE BOROUGH OF DEWSBURY & IN THE RAVENSTHORPE URBAN DISTRICT IN 1904.

Weller & Graham, Ltd Litho. London.


UTION
E
Y &
4.
HECKMONDWIKE
URBAN
DISTRICT
Kilpin Hill Mills
Thornroyd Villa
Smithies Bridge Mill
Smithies
Spen Vale Mills
Orchard Works
Walkley Mills
Chemical Works
Walkley Terrace
The Bottoms
Low Mill
Filter Beds
Low Farm
Liversedge Park Farm
Park Farm Colliery
Park Colliery
Finching Dike
Parly. Co. Div. & U.D. Bdy.
Parly. Co. Div. By.
Parly. & Munl. Boro.
Lighthouse Tannery
Dewsbury House
RAVENSTHORPE BRANCH
DEWS
Tomroyds House
Northfield Baths
Primrose
Highfield House
Hall
Northorpe
School
U.D. Bdy.
Parly. Boro. Bdy.
Bridge
Station
Mills
MIRFIELD
URBAN
DISTRICT
Church
L D
Chapel
Colliery
RAVENSTHORPE
Gas Works
Church
Sch.
Malthouses
School
Mills
Inn
Fir Cottage
Shepley Bridge
Mills
Towing Path
Sands
CLECKHEATON BRANCH
EARLSHEATON COMMON
Munl. & Boro. Bdy.
NAVIGATION
London.

REPORT

UPON

SMALL-POX

IN THE BOROUGH OF DEWSBURY IN 1904.

The Borough of Dewsbury was attacked by small-pox in 1904, when in an estimated population of 27,502, 552 cases were notified, with 57 deaths, being an attack rate of 20.0 per 1,000 of population, and a case mortality of 10.3 per cent. During 1905 up to March 4th, when the epidemic subsided, 11 other cases, with 3 deaths were reported, making a case mortality for the whole epidemic of 10.6 per cent.

For many months the trade of the town, particularly of the shopkeepers, suffered severely, and the Borough attained an unenviable notoriety, not only in the West Riding, but elsewhere.

The object of this Report is to describe the course of the epidemic, the measures adopted to cope with it since my appointment in October, 1904, and the lessons which are, in my judgment, to be learnt from the epidemic, so that the unfortunate experiences which the town has undergone may not be repeated at some future time.

It is convenient to deal with the subject under four main headings :—

I.—General History of the Epidemic.

II.—The Measures taken to deal with the Epidemic.

III.—The Effects of Vaccination.

IV.—The Report on the Small-pox Hospital.

This last section has been written by Dr. E. Maynard Ashcroft, M.B., Ch.B., D.P.H., Resident Medical Officer at the Hospital.

PART I.

GENERAL HISTORY OF THE EPIDEMIC.

It is instructive to dwell shortly upon the experiences which Dewsbury has undergone with small-pox in the past. In 1892 Dr. Sydney Coupland visited the district in compliance with the instructions of the Royal Commission on Vaccination, which was then sitting; from his report to the Commission I have extracted the following table, which shows, as far as information was available the number of cases of small-pox, and the deaths from that disease in the Borough from 1873 to 1892. I have further brought the table up-to-date as far as information has been obtainable.

TABLE I., *showing the number of small-pox cases and deaths in the Borough of Dewsbury from* 1873 *to* 1905, as far as information is available :—

Year.	Notified Cases.	Deaths.	Year.	Notified Cases.	Deaths.
1873	Not Known.	14	1891	33	14
1874		129	1892	222	45
1875		5	1893	38	1
1876		..	1894	19	3
1877		..	1895	3	..
1878		3	1896	1	..
1879		1	1897	7	1
1880		4	1898	..	..
1881		7	1899	..	..
1882		9	1900	..	..
1883		..	1901	..	..
1884		..	1902	7	..
1885		..	1903	137	8
1886		..	1904	552	57
1887		..	1905	11	3
1888		2	(to March 4th, the end of the 1904-5 Epidemic.)		
1889		..			
1890		..			

After comparative freedom from small-pox for some years following the 1892 outbreak, the disease recurred in 1903, when 137 cases were notified. The epidemic subsided in the autumn of that year, but in February, 1904, it again recurred, the first case being notified on the 11th of that month.

As commonly happens, the origin of many of the early cases was readily discovered. But as time went on, when infection was widely diffused over the Borough, and when, as will be mentioned later, undiscovered cases were attending work or walking about the town, persons developed small-pox, and the strictest investigation failed to ascertain the source of infection in numerous instances. Conversely, in some cases a variety of possible sources of infection was ascertained.

FACTORS WHICH INFLUENCED THE DEVELOPMENT OF THE EPIDEMIC.

It is a melancholy fact to record, but it must be stated that much of the spread of the disease was due entirely to the actions of the people of Dewsbury themselves. This is a subject upon which a good deal could be written, but, stated shortly, the main factors which, in my judgment, led to the dissemination of infection were :—

(1) EXPOSURE OF INFECTED PERSONS.—It was not uncommon for neighbours and friends to be admitted to invaded houses pending the arrival of the Officers of the Health Department to remove the case to hospital. I have known of sufferers from small-pox calling at houses to tell their friends that they thought they had small-pox. It was a common thing, at one time, for neighbours to flock to houses where persons were lying ill, it might be from small-pox, partly from sympathy, and partly also from curiosity. It sometimes happened that a fortnight later these visitors were, in their turn, removed to the Small-pox Hospital. In one case a man attended a fête in the Public Park on the very day of his removal to hospital. He infected a number of people. It was not uncommon for neighbours to be called in in consultation in doubtful cases, and sometimes they unfortunately proved to be mistaken in their diagnoses. At other times their opinions were found to be correct and the diagnosis was further verified by an attack in their own persons a fortnight later.

(2) Exposure of Infected Articles.—Instances came to light where infected bedding and the like were removed from infected houses to avoid disinfection. In one instance a case of small-pox had been removed from a house late at night, the intention being to disinfect the premises and contents next morning. Owing to the nature of the locality, it was deemed expedient to arrange for Sanitary Inspectors to remain on guard all night, a fact of which the occupants of the house were ignorant. It so happened that early in the morning the head of the family was caught in his own doorway, redhanded so to speak, with an armful of bedding, etc., his intention being to deposit the articles in some secure spot until after disinfection had been accomplished. How often this kind of thing happened in the interval between a householder suspecting small-pox in his family and the summons of a medical man to see the case—and perhaps later—I am not in a position to say.

(3) Non-notification of Cases.—This section has not been labelled " Concealment of Cases," though in many instances this would have been a more accurate description. As must needs happen in most epidemics, some mild cases escaped diagnosis until the occurrence of a second case in the house. Sometimes blame could hardly in justice be laid upon the parties concerned, in view of the difficulty in diagnosing such cases. I am glad, however, to record here the fact that in many instances where reasonable doubt or difficulty existed, the medical men concerned invited me to see the cases with them in consultation, when sometimes small-pox was diagnosed, and sometimes a negative conclusion was arrived at.

But it did happen that in a number of instances householders who must have known that small-pox—a topic which was upon everyone's tongue in Dewsbury for many months—had attacked a member of their family, deliberately refrained from reporting the case or from calling in a medical man. Such people, it is known, infected a number of others ; in one instance, 9 cases were traced to such an action, and others no doubt occurred from the same source, but the connecting links could not be traced.

Sometimes anonymous information led to the discovery of persons suffering from the disease before much damage was done.

Early information occasionally was given by employers of labour that workpeople were absent from work, and sometimes information was given by the School Attendance Officers.

Early in 1905 a man was summoned before the Borough Bench for failing to notify a case of small-pox in his house, and he was fined 10s. and costs, or 14 days.

This man had himself had a mild attack of small-pox ; a fortnight later one of his sons was attacked ; some three weeks later, his wife, another son, a man next door, together with his son were attacked (this latter boy dying from small-pox). It was not until the occurrence of this last group of cases that the concealment was discovered.

The following is a list of the unnotified cases which afterwards came to the knowledge of the Health Department, together with the number of persons who are known to have been infected by them ; the list comprises, it is surmised, only a fraction of those which occurred or which were actually infected in this way, and it does not contain cases notified a fortnight after their commencement when other cases were discovered in the same household.

PARTICULARS OF UNNOTIFIED CASES OF SMALL-POX AND THE CASES INFECTED BY THEM.

A. H. was ill at home with small-pox about a fortnight prior to the removal of her husband, J. H. and child, L. H., to hospital. L. M., another inmate, also contracted the disease and was removed to hospital, *i.e.*, 3 cases from this unnotified case.

W. B. contracted a mild attack of small-pox (unnotified) ; his son, W. B., was attacked about a fortnight later (also unnotified) and some three weeks later his wife, another son, and two persons living next door, were notified to be suffering from small-pox, *i.e.*, 5 cases from the first unnotified case.

A. E. T. developed the rash of small-pox a day or so after consulting a herbalist, who informed her that she was suffering from "Russian Influenza." The case was not notified, and the only other inmate of the house, her daughter, E. A. T., was notified to be ill with small-pox a fortnight later.

S. A. G. suffered from an unnotified attack of small-pox and attended work in Savile Town (Thornhill Urban District) whilst in an infectious condition. I am informed by the Medical Officer of Health of that District, that he traced no cases to S. A. G. Nine Dewsbury cases (4 in S. A. G.'s house) were notified among the contacts.

A. E. E., an unvaccinated child, was attended by a medical man who diagnosed chicken-pox (this was before chicken-pox was notifiable). A fortnight later his unvaccinated sister developed small-pox. The father and mother, who were the only other members of the family, had had small-pox in infancy. They had never been vaccinated, and still appear to be anti-vaccinators.

A. W. had an anomalous illness, with one or two spots, which did not look like small-pox. However a fortnight later, her sister developed small-pox. Apparently then A. W.'s attack was the same disease.

Mrs. S. developed a few spots and was prematurely delivered of a child who had a copious eruption, which became pustular. Apparently both these cases, neither of which were notified, were small-pox. For some reason, not very well explained, the husband went to live elsewhere, and the rest of the household kept themselves isolated at home for some weeks, and no further cases were traced to them. Excepting that they acted on the assumption that they had grounds for believing that the illness was small-pox, it is not easy to understand the rigorous measures they adopted. The house and contents were disinfected on information of this reaching the Health Department.

N. A., a baby, aged 8 months, suffered from an unnotified attack of the disease for a fortnight before the development of small-pox in E. S., the child's aunt. E. S. was removed to hospital and in all probability some cases in the vicinity were infected by this child.

(4) NEGLECT OF VACCINATION.—The question of the value of vaccination and the extent to which it has been neglected in the past, is dealt with in Part III.

It is here a proper place for pointing out that where a person who has not been recently vaccinated (*i.e.*, within 8 to 10 years) is vaccinated within three days after a first exposure to the infection of small-pox, the disease in very many cases does not develop in that person. Of course people who have not been recently vaccinated, or not vaccinated at all, may also be exposed to the infection of small-pox, and may not contract the disease.

An analysis has been prepared (see Part III.) to show the condition as to vaccination of each inmate of each house invaded by small-pox where more than one case occurred in that house. (These families were selected so as to get particulars of a maximum number of cases at an expenditure of a minimum amount of time.) From this we see the proportion of unvaccinated and vaccinated persons—all exposed to small-pox—who did actually contract the disease. One cannot say that they were all equally exposed to infection for the same length of time, because some cases were discovered and removed at earlier periods in their illness than others, but on such a number of cases as that with which the analysis deals, it is probable that the one class was, as a class, as equally exposed as the other class, and that therefore the results obtained by contrasting the amount of small-pox among vaccinated and unvaccinated contacts are comparable.

It should be further stated that where vaccination is performed too late to prevent the development of the disease, still, if it is done early in the period of incubation (which lasts 12 days) the severity of the attack is very often much reduced. If vaccination be performed late in the period of incubation, it has probably no influence upon the course of the disease.

Instances happened where persons refused vaccination after being in contact with small-pox, then a fortnight later, another member of the household was attacked and vaccination was again offered and refused, and after another fortnight another member or members were attacked. I have no hesitation in saying that such cases as the last group would have been prevented if vaccination had been performed when the first case occurred.

To the refusal of vaccination and re-vaccination in invaded households must be attributed no small influence in favouring the continuance of the epidemic. It must be borne in mind that each case occurring may, in its turn, infect any number of persons, the quantity being only limited by the number of persons in a susceptible condition with whom the infectious person has come in contact. As will be seen later, *prompt* vaccination and re-vaccination of the inmates of an invaded house commonly serves to limit the disease to the person first attacked.

(5) INCOMPLETE DISINFECTION OF INFECTED ARTICLES AND PREMISES.—Hitherto the agents favouring the spread of the disease have all referred to shortcomings of the people generally. In some matters, however, improvements in the methods of dealing with the epidemic were found to be desirable. Up to the end of October, 1904, the common method of disinfection was to burn Sulphur in the infected room and to disinfect at the steam disinfector the bedding in that room. After October, the whole house from top to bottom was sprayed with Formalin (1-80), all articles in the house which would stand steam disinfection were disinfected in that way, and the remaining articles either sprayed with Formalin or fumigated with Sulphur or Formalin. While this was going on, the contacts were removed to the Contact Station, as described later, where they and their clothing were disinfected. The Contact Station, designed before my arrival, was opened on October 24th. To these measures must be ascribed some share in subduing the epidemic. Their employment necessitated a considerably augmented staff, which was sanctioned by the Sanitary Committee in October.

(6) OBSERVATION OF CONTACTS.—Owing to the increased number of cases, and seeing that the staff was not numerically capable of dealing with a large number of contacts, sufficiently complete observation of those who had been in contact with cases could not, at one time, be carried out. The engagement of a sufficient number of men for this work was a measure of the utmost value in the early detection of cases among contacts. I have pleasure in stating here that these temporary assistants did their work extremely well.

(7) VARIOUS MISCELLANEOUS MATTERS.—At one time, the Hospital, by reason of its methods of administration, served to infect some persons, as described later.

Two or three cases occurred among tramps, but neither the origin nor the development of the epidemic was associated with this class, contrary to the experience of many other places.

A number of Dewsbury persons were infected in neighbouring districts and developed small-pox in Dewsbury, as is shown in the following table :—

TABLE II.—*Showing List of Cases Infected in outside Districts and developing Small-pox in Dewsbury.*

Name of Case.	District in which case is believed to have been infected.	Remarks.
R. H.	Liversedge	First case in 1904 epidemic.
A. R. ..	Knottingley ..	
L. S. ..	Ravensthorpe ..	
R. H. C. ..	,, ..	Postman in Ravensthorpe.
A. A. ..	,, ..	
E. L.	,, ..	Contact with infected person.
S. C.	,, ..	Infected while attending funeral of a small-pox patient.
E. A. P... ..	,, ..	Known to have visited an infected house.
J. E. D. ..	,, ..	Known to have visited an infected house.
E. E. ..	,, ..	Known to have visited an infected house.
J. H.	,, ..	Known to have been in contact with an infected person.
M. W.	,, ..	Contact with infected person.
G. T.	Thornhill ..	
J. W. H. ..	,, ...	Supposed to have been infected at work.
A. M.	,, ...	Known to have visited an infected house.
S. F. ..	,, ...	
S. P. ..	Soothill Nether ..	Known to have visited an infected house.
W. J. G. ..	Heckmondwike ..	Known to have visited an infected house.
T. S. ..	,, ..	Contact with infected person.
M. A. H. ..	,, ..	Contact with infected person.
H. M. L. ..	,, ..	Contact with infected person.
T. M. ..	Batley	Visited infected house.
S. H.	Ossett	Watched removal of small-pox case.

Against instances of this kind can be set off the number of persons who were infected in Dewsbury and developed the disease in other districts.

(8) ADMINISTRATIVE DIFFICULTIES.—The above circumstances where persons were infected in one district and developed small-pox in another leads one to the conclusion that much of the difficulty of attempting to deal with an epidemic of small-pox (and the same arguments apply to outbreaks of diphtheria, measles, scarlet fever, and some other diseases) is a geographical one. Houses in the Borough of Dewsbury are practically contiguous, or nearly so, with houses in Ravensthorpe (Ravensthorpe Urban District), Thornhill Lees and Savile Town (Thornhill Urban District), Earlsheaton (Soothill Nether Urban District), part of Batley Carr (Borough of Batley), Soothill Upper Urban District, and Heckmondwike (Heckmondwike Urban District). Numbers of persons live in Dewsbury and work in these places or live in these places and work in Dewsbury. To some extent the same remark applies to school children. Infection of, say, small-pox, may be received in one district and such cases may infect in other districts persons with whom they come in contact. A Medical Officer of Health has considerable difficulty in tracing and preventing infection when he is not fully conversant with all the facts, a state of affairs now existing inasmuch as all the above districts are under the supervision of different Medical Officers of Health. To a certain extent information is transmitted officially from one district to another, but not to an extent sufficient to adequately deal with infected persons and things. On a considerable number of occasions persons have developed small-pox in Dewsbury, and on asking them when they were in contact with small-pox, they have replied that on a certain date—the date of infection—they visited someone afterwards reported to have been sent to hospital with small-pox from another district, or that they attended a funeral of a person who died from small-pox in another district. On most of these occasions we, in Dewsbury, received no intimation (because probably no information was available) that such contacts had come into the Borough after being exposed to infection. No doubt we in Dews-

bury have also inadvertently omitted to send information of a similar nature. I am glad, however, to take this opportunity of thanking the Medical Officers of Health of neighbouring districts for their kindness in obtaining various particulars for me from persons in their districts, and for assistance in other ways.

What is wanted, therefore, is prompt co-ordination of action between the various districts. In view of the very close proximity of the several townships, and of the intercommunication between their residents, it is in the direct interests of these districts to form a combination, if only for sanitary purposes. Such an action would, in the past, have obviated many of the difficulties which arose during the recent epidemic, and it would, I think, have had an influence in bringing about an earlier cessation of the epidemic, not only in Dewsbury, but in the surrounding districts as well.

With a community of interests in this and other matters it is to be regretted that measures of the sort I have indicated have not yet been adopted by the various Councils concerned. From the public health standpoint, the only one with which I am qualified to deal, such a combination would be of the greatest possible service to the constituent districts.

SOURCES OF INFECTION OF SMALL-POX.

Inquiry which has been made into the sources of infection of the cases shows that several methods of infection were in operation. These may be classified as follows :—

I.—*Infection received by Living in an Infected House.*
II. ,, ,, *by Visiting an Infected House.*
III. ,, ,, *at place of Work.*
IV. ,, ,, *at School.*
V. ,, ,, *by means of the Small-pox Hospital.*
VI. ,, ,, *by coming into casual contact with an Infected Person.*
VII. ,, ,, *from unascertained sources.*

I.—INFECTION RECEIVED BY LIVING IN AN INFECTED HOUSE.

Of the 552 cases which occurred in 1904, 280 occurred in 280 houses, leaving 272 cases in 93 houses. Table III. shows the distribution of the cases in relation to secondary cases in previously infected houses.

TABLE III., *showing numbers of cases in houses :—*

In each of	280	houses there was only	1 case	=280 cases
,, ,,	51	,, ,, were	2 cases	=102 ,,
,, ,,	18	,, ,, ,,	3 ,,	= 54 ,,
,, ,,	14	,, ,, ,,	4 ,,	= 56 ,,
,, ,,	4	,, ,, ,,	5 ,,	= 20 ,,
,, ,,	3	,, ,, ,,	6 ,,	= 18 ,,
,, ,,	2	,, ,, ,,	7 ,,	= 14 ,,
,,	1	house there were	8 ,,	= 8 ,,
In	373	houses there were		552 cases.

In a number of instances every member of the family was attacked, or had previously had small-pox, or had been recently vaccinated, or had been revaccinated. Examples of this are shown in the following table, which has been compiled by visiting nearly every house in Dewsbury which had been attacked by small-pox in 1904, and interrogating the inmates as to their vaccination condition.

[Recent vaccination for the purpose of the table is taken as vaccination performed within 10 years before exposure to infection. This period is selected as it is that which is taken by the Local Government Board in their Orders to Public Vaccinators, who ordinarily receive no fees for public re-vaccination performed on any person who has undergone the operation less than 10 years before.]

TABLE IV.—*List of Households invaded by Small-pox where the disease attacked all inmates except those who were protected by recent vaccination, or re-vaccination, or who had had a previous attack of Small-pox :—*

Names of Inmates.	Age (years) at date of attack of first case.	Vaccination condition at date of first exposure to infection.	Remarks.
G. W. C.	56	Re-vaccinated 20 yrs ago	Escaped.
M. C.	44	Vaccinated in infancy	Developed small-pox
C. C.	11	Unvaccinated	,, ,,
G. T. C.	8	,,	,, ,,
F. S.	35	Vaccinated in infancy	Developed small-pox.
E. S.	35	,, ,,	,, ,,
H. S.	15	Unvaccinated	,, ,,
M. S.	13	,,	,, ,,
A. S. (1)	9	,,	,, ,,
A. S. (2)	4	,,	,, ,,
A. S. (3)	12	,,	,, ,,
G. L.	43	Vaccinated in infancy	Developed small-pox.
S. L.	46	,, ,,	Had small-pox in youth
H. M. L.	23	,, ,,	Developed small-pox.
H. L.	14	,, ,,	,, ,,
N. R.	47	Never vaccinated	Had small-pox in infancy
W. R.	28	Vaccinated in infancy	Developed small-pox.
E. C.	22	,, ,,	,, ,,
M. E. C.	22	,, ,,	,, ,,
R. C.	19	Re-vaccin. 3 months ago	Escaped.
J. N.	39	Vaccinated in infancy	Developed small-pox.
A. N.	36	,, ,,	,, ,,
M. N.	12	,, ,,	Had small-pox in 1903.*
S. E. N.	9	,, ,,	Escaped.*
E. N.	5	Never vaccinated	Had small-pox in 1903.*
J. F.	32	Vaccinated in infancy	Developed small-pox.
A. F.	27	,, ,,	,, ,,
W. F.	5	,, ,,	Escaped .
T. F.	3	,, ,,	,, ,,
J. F.	8 mths.	,, ,,	,, ,,
M. G. O.	28	Vaccinated in infancy	Developed small-pox.
E. O.	26	,, ,,	,, ,,
E. B.	49	Never vaccinated	Developed small-pox.
J. B.	58	Vaccinated in infancy	,, ,,
E. H.	66	Re-vaccin. 20 years ago	Escaped.
A. H.	26	Vaccinated in infancy	Developed small-pox.
J. H.	26	,, ,,	,, ,,
L. M.	32	Unvaccinated	,, ,,
L. H.	2	,,	,, ,,

* Accommodated at Convalescent Small-pox hospital during parents' stay in hospital. S.E.N. did not contract Small-pox.

TABLE IV.—*Continued.*

Names of Inmates.	Age (years) at date of attack of first case.	Vaccination condition at date of first exposure to infection.	Remarks.
W. B.	45	Vaccinated in infancy	Developed small-pox.
J. B.	40	,, ,,	,, ,,
A. B.	14	Never vaccinated.	,, ,,
W. B.	10	,, ,,	,, ,,
A. B.	6	Vaccinated in infancy	Escaped.
E. S.	27	Vaccinated in infancy	Developed small-pox.
H. S.	26	Never vaccinated	,, ,,
D. S.	2	,, ,,	,, ,,
A. E. T.	42	Vaccinated in infancy	Developed small-pox.
E. A. T.	19	,, ,,	,, ,,
S. C.	54	Vaccinated in 1904	Small-pox in childhood
J. C.	26	Vaccinated in infancy	Developed small-pox.
B. C.	23	,, ,,	,, ,,
M. C.	17	Vaccinated in 1904	Escaped.
W. S.	34	Vaccinated in infancy	Developed small-pox.
H. L. S.	30	Never vaccinated	,, ,,
F. S.	8	Vaccinated in infancy	Escaped. Accommodated in convalescent small-pox hospital during parents' stay in hospital. These children did not develop small-pox.
B. S.	5	,, ,,	,,
J. W. S.	2	,, ,,	,,
W. S.	30	Vaccinated in infancy (no marks)	Developed small-pox.
A. S.	30	Vaccinated in infancy	,, ,,
H. S.	7	Never vaccinated	,, ,,
I. S.	2	Vaccinated in infancy	Escaped.
E. S.	4 dys.	Unvaccinated	Developed small-pox.
E. A. D.	46	Never vaccinated	Small-pox in childhood.
E. W.	23	Vaccinated in infancy	Developed small-pox.
J. E. D.	20	Re-vaccinated recently	Escaped.
G. D.	18	Vaccinated in infancy	Developed small-pox.
W. D.	13	Never vaccinated	,, ,,
B. D.	9	,, ,,	,, ,,
T. D.	5	,, ,,	,, ,,
H. D.	2	,, ,,	,, ,,
M. A. D.	4	,, ,,	,, ,,
J. W. T.	36	Unvaccinated	Developed small-pox.
L. T.	34	Vaccinated in infancy	,, ,,
A. D. T.	4	,, ,,	Escaped.
M. A. T.	2	Unvaccinated	Developed small-pox.
T. A. T.	1	Vaccinated in infancy	Escaped.
G. E.	35	Vaccinated in infancy	Developed small-pox.
P. E.	26	,, ,,	,, ,,
C. A.	29	Vaccinated in infancy	Developed small-pox.
F. A.	4	Unvaccinated	,, ,,
L. A.	3	Vaccinated in infancy	Escaped.

TABLE IV.—*Continued.*

Names of Inmates.	Age (years) at date of attack of first case.	Vaccination condition at date of first exposure to infection.	Remarks.
F. E.	38	Unvaccinated	Had small-pox in childhood.
A. E.	35	,, ...	,, ,,
E. E.	9	,, ...	Developed small-pox.
A. E. E. ..	7	,, ...	,, ,,
J. T. B. ..	23	Vaccinated in infancy ..	Developed small-pox.
E. B.	27	,, ,,	,, ,,
K. B.	2	,, ,,	Escaped.
A. W. ..	70	Vaccinated in infancy ..	Developed small-pox.
S. A. W. ..	72	,, ,,	,, ,,
E. B.	35	Re-vaccinated recently	Escaped.
W. B. ..	20	Unvaccinated	Developed small-pox.
E. A. B. ..	44	Vaccinated in infancy ..	,, ,,
W. G. H. ..	21	Vaccinated in infancy (no marks)	Developed small-pox.
G. H.	18	Unvaccinated	Had small-pox in childhood.
— T.	48	Vaccinated a month ago	Escaped.
E. T.	51	Vaccinated in infancy ..	Developed small-pox.
B. T.	24	Vaccinated a month ago	Escaped.
C. T.	22	,, ,,	,,
E. A. T. ..	17	Vaccinated a week ago	,,
P. T.	9	,, ,,	,,
S. S.	56	Not vaccinated.. ..	Had small-pox in childhood.
D. S.	34	Vaccinated in infancy ..	Developed small-pox.
J. R. R. ..	58	Not vaccinated ..	Had small-pox in infancy
E. R.	28	Vaccinated in infancy ..	Developed small-pox.
W. R. ..	26	Re-vaccin. 9 years ago	Escaped.
R. L.	68	Re-vaccin. 50 years ago	Escaped.
F. L.	36	Vaccinated in infancy unsuccessfully.	Had small-pox when 3 years old.
H. A.	39	Unvaccinated	Had small-pox when 4 years old.
E. A.	10	,, ...	Developed small-pox.
H. B.	37	Vaccinated in infancy ..	Had small-pox in 1903.
J. B.	36	,, ,,	Developed small-pox.
N. B.	9	,, ,,	Escaped.
D. B.	4	,, ,,	,,
J. B.	1½	,, ,,	,,
R. T.	47	Vaccinated in infancy ..	Developed small-pox.
S. A. T. ..	44	Unvaccinated	Had small-pox in infancy
C. T.	20	Revaccinated 2 months ago (unsuccessfully)	Escaped.

TABLE IV.—*Continued.*

Names of Inmates.	Age (years) at date of attack of first case.	Vaccination condition at date of first exposure to infection.	Remarks.
W. J. ..	30	Vaccin. 2 months ago	Escaped.
E. J.	29	Vaccinated in infancy ..	Developed small-pox.
W. H. J. ..	9	Vaccinated 4 years ago	Escaped.
M. J.	3	Vaccinated 1 year ago..	,,
J. H.	21	Re-vaccin. 1½ years ago	Escaped.
S. H.	19	Unvaccinated	Developed small-pox.
J. C.	38	Vaccinated in infancy ..	Had small-pox 14 years ago.
A. C.	9	Unvaccinated	Developed small-pox.
G. W. ..	42	Vaccinated in infancy ..	Developed small-pox ..
M. W. ..	40	Re-vaccin. a year ago..	Escaped.
G. W. ..	20	,, ,,	,,
E. H.	45	Vaccinated in infancy ..	Had small-pox 13 years ago.
N. H.	19	Unvaccinated	Had small-pox 13 years ago.

This table shows that in the 34 families mentioned every person who was not protected against small-pox by "recent" vaccination, re-vaccination, or by a previous attack of small-pox contracted that disease.

In a large number of other families vaccination which does not come under the definition of "recent" vaccination (*i.e.*, within 10 years) has protected them.

If it be a coincidence that in these 34 families every "unprotected" person was attacked, it follows that this coincidence occurred in 34 different houses, a result numerically very improbable. It would appear that the opposite condition should also share in the coincidence—if it be a coincidence—and every "protected" person should be attacked, and every "unprotected" person escape. We find, however, that there is no evidence of this, and the coincidence only works in one direction, in favour of the vaccinated.

II.—INFECTION RECEIVED BY VISITING AN INFECTED HOUSE.

This was a method of infection which was no doubt very common, but one impossible of proof in the absence of assistance from the householders and patients themselves. It was a common thing for neighbours to visit houses where persons were sickening of small-pox, but it was a matter of some difficulty to obtain proof of this, except from the more candid people who desired to lend the Health Department assistance. In many cases, when the damage was done, it would be admitted that an infected house had been visited, or that neighbours had been allowed to visit patients before their removal to hospital. Sometimes persons in Dewsbury, not content perhaps with the opportunities for infection which Dewsbury afforded, visited houses invaded by small-pox in other districts, and returned home to develop small-pox in due course; in this way the development of the epidemic was aided. A strong presumption in favour of visiting being a source of infection is furnished by referring to the street list, given on page 38, where, in some streets small-pox has paid what is something like a house-to-house visit. This same fact is also shown graphically upon the map which is appended.

III.—Infection and Occupations.

As a factor in maintaining the epidemic, this method of infection was not of very much importance. What is meant by this is that the simultaneous development of a number of cases at the same place of work was very infrequent. No doubt a number of cases were infected at their place of work, or in the course of their employment, but this was not apparently a factor of very great magnitude.

A number of cases occurred in workmen and tradespeople, or in their families, who worked at or visited the Small-pox Hospital. This is dealt with later (see page 29).

Some persons engaged on public duties, or who came into daily contact with a large number of different people developed the disease, *e.g.*, 2 Railway Porters (at different stations), 1 Station Master, 1 Postman, and 4 persons engaged in Public-Houses; 3 persons employed in Hairdressers' establishments were also attacked.

As to the occupations of the other persons attacked, the principal employments followed were :—

TABLE V.—*Showing principal Occupations followed by persons contracting Small-pox in* 1904.

Millhands	69	Dyers	7
Labourers	13	Weavers	30
Navvies	7	Schoolchildren	119*
Teamers	7	Other children under 5 yrs.	39†
Colliers	9	Adults with no occupation	113
Rag Pickers and Sorters	13		

No other occupation has yielded more than 4 cases.

* Of whom 112 were unvaccinated } at date of infection.
† Of whom all were unvaccinated }

A somewhat large number of cases occurred among employees of the Dewsbury Corporation. This is shown in the following table :—

TABLE VI.—*Showing Cases among Corporation Employees.*

Name.	Nature of Employment.	Remarks.
J. C.	Gardener at Public Park	Infected at Fete in Park.
E. G.	Checker, employed at Town Yard.	Two brothers also infected (see below, R. G. and H. G.).
F. T.	Stoker, employed at Destructor	..
S. C.	Labourer, General Works Dept.	..
W. A.	Labourer (worked at Small-pox Hospital).	Wife also infected.
A. L.	Teamer (night soil)	..
M. J. W.	Cleaner at Town Hall	..
M. M.	Wardmaid at Small-pox Hospital.	Only vaccinated successfully in infancy.
M. W.	Nurse at Small-pox Hospital	Only vaccinated successfully in infancy.
R. G.	Labourer, General Works Dept.	..
H. G.	,, ,, ,,	..

A number of cases occurred in the families of Corporation employees, as shown in the following table :—

TABLE VII.—*Showing Cases in Families of Corporation Employees.*

Name of Case.	Nature of occupation of Corporation Employee in family.	Remarks.
A. M. ..	Lamplighter	..
A. C.	Labourer, Roads Department	..
M. C. A. C.	Grave digger	..
L. D. ..	Blacksmith at Town Yard ..	..
E. E.	Clerk at Electricity Works ..	..
E. A. B. ..	Lamplighter	..
R. H. B. ..	Road Sweeper	..
M. A. ..	Labourer at Small-pox Hospital.	See W.A. in Table VI.

It is noteworthy that no Medical Man, Member of the Police, School Teacher, Tramway Employee, or Postman (with one exception, an ex-soldier *unsuccessfully* re-vaccinated 5 years previously, and not again re-vaccinated on joining the Post Office service) contracted small-pox.* The Police were all recently vaccinated, persons joining the Post Office service have to be vaccinated or re-vaccinated on joining that service; many of the school teachers were re-vaccinated. The medical men, a body of persons very much exposed to infection, escaped entirely, although where other infectious diseases are concerned it is not uncommon for medical men to be attacked. The nurses at the hospital, with the exception of a nurse *unsuccessfully* re-vaccinated, escaped; the wardmaid attacked was a middle-aged woman, vaccinated in infancy and unsuccessfully re-vaccinated, and with these two exceptions all other persons employed at the hospital escaped infection. It must surely be something more than a coincidence that small-pox is rare among persons employed at small-pox Hospitals, and that when they are attacked, it is invariably, in practically all cases, whether at London, Leicester, Gloucester, Dewsbury, or elsewhere, those who have not been successfully vaccinated or re-vaccinated within the previous ten years. It has been said that such persons take such precautions (apart from vaccination) that they escape attack, but neither I nor anyone else has yet made the most valuable discovery as to the precautions taken by, say, a laundry woman in a small-pox Hospital, engaged day after day in washing infected and soiled bed-clothes, garments,etc.,from morning to night, such clothes,etc.,coming straight from the patients' beds to the laundry. An explanation on this point from those who hold anti-vaccination views would seem to be a point of the first importance. These are, however, some of the matters passed over in silence.

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* The usual causes of unsuccessful vaccination or re-vaccination are :—

1. Imperfect technique at the operation.
2. Inert vaccine lymph, *i.e.*, lymph which has been kept too long. This is the common cause.
3. Re-vaccination at a period too near that of vaccination.
4. Interference with the site of inoculation before the lymph is absorbed. Thus soldiers are said to suck out the lymph, and mothers at times developed vaccine vesicles on the lips, infected from their child's arm.
5. Vaccination late in the incubative period of small-pox.

IV.—Infection received at School.

This does not appear to have been a factor of any great magnitude. Experience elsewhere has shown, on many occasions, the consequence of a child attending school whilst suffering from small-pox. The result is that in the class of which this child is a member, all or nearly all, who have not been vaccinated contract small-pox, and that of the other children in the school a large number of those unvaccinated become infected. The most recent example of this occurred at Ossett, and has been reported upon by Dr. Kaye (Medical Officer of Health to the West Riding County Council) and Dr. Greenwood (Medical Officer of Health, Ossett Borough). I append their figures because they refer to a neighbouring Borough, where such an extraordinary condition of affairs is revealed as to make them worthy of the consideration of the inhabitants of Dewsbury, and, indeed of any district.

Shortly, an unvaccinated child attended school in Ossett whilst suffering from small-pox. Of the 27 children in her class, 6 had been vaccinated and re-vaccinated (all escaped attack), 13 had been vaccinated only in infancy (all escaped attack), 8 were unvaccinated (all were attacked by Smallpox).

Of the 42 other scholars in the same room, 8 had been vaccinated and re-vaccinated (all escaped attack), 20 had been vaccinated only in infancy (5, all over 11 years of age, contracted small-pox), and 14 were unvaccinated (12 were attacked by small-pox).

In another room were 74 scholars, 31 were vaccinated (all escaped attack), and 43 were unvaccinated (13 were attacked by small-pox).

In another room were 26 scholars, 14 had been vaccinated (all escaped attack), and 12 were unvaccinated (4 contracted small-pox).

Summing all these figures together, we get the following result, expressed in tabular form :—

TABLE VIII.—*Showing particulars of the Ossett School Outbreak.*

Room or Class.	Unvaccinated Scholars.		Vaccinated Scholars.		Total Scholars.	
	Attacked.	Escaped.	Attacked.	Escaped.	Attacked.	Escaped.
Room A, Standard IV. where first case occurred ..	8	..	..	19	8	19
Remainder of Room A	12	2	5*	23	17	25
Room B	13	30	..	31	13	61
Room C	4	8	..	14	4	22
TOTALS ..	37	40	5*	87	42	127

*All over 11 years of age.

Applying to these figures the axiom that persons not vaccinated within the last 10 years are not protected against small-pox (a statement insisted upon throughout this Report), the above table bears out the axiom in its entirety.

These figures do not require any comment ; they have shaken the misplaced faith of some anti-vaccinators, and I reproduce them from Drs. Kaye and Greenwood's most interesting report in order that people who have not seen them before may consider them.

Dewsbury can furnish no such record as this, since, as far as is known, no child was found in any school in the Borough while the rash of small-pox was upon the scholar. A fact which makes it improbable that children whilst in an infectious state attended school, is that at the beginning of the epidemic, 66 per cent., and at the end of the epidemic, 33 per cent. of the children attending school were unvaccinated. It is contrary to common knowledge that children suffering from small-pox could have attended school without causing wide-spread prevalence of the disease among the unvaccinated school children in attendance.

Some half dozen cases did, however, occur about the same time among children attending Dewsbury Moor Council School, and the only factor common to them all was attendance at the same school. No child is known to have attended while the rash was out, and the medical examination which I made of all the scholars failed to discover any one with the remains of a small-pox eruption. A very mild case might have left marks so indistinct as to be not readily recognisable. It was not considered necessary to close the school as no other cases developed.

Some cases also occurred at St. Matthew's Church School, West Town, which was closed by the late Medical Officer of Health from September 2nd till October 25th. Nineteen cases occurred among children attending this school, seven of them during the first week in September. I am inclined to think that these children were infected from another child, but contact with it probably did not occur within the school, on account of the comparatively small number of resulting cases.

A number of other cases occurred in school children, but I do not attribute their infection to the schools.

Information as to the vaccination condition of every child of school age in the Borough (as far as could be ascertained) is given in Part II., page 55.

V.—Infection received by means of the Corporation Small-pox Hospital.

It is commonly noticed that the incidence of small-pox among persons living in houses in the vicinity of small-pox Hospitals is in greater proportion than among persons living elsewhere in the same district, or adjoining districts. Two reasons are ascribed for this condition of affairs : (*a*) Administrative deficiencies, (*b*) Aerial convection, *i.e.*, air-borne infection.

As to the former, the truth of this is not denied by anyone ; but whether there is such a thing as aerial convection of small-pox is strenuously denied by some medical men. The facts will merely be shortly stated, as a critical examination of the influence of these methods of spread of infection from small-pox Hospitals would be a lengthy matter.

(*a*) ADMINISTRATIVE DEFICIENCIES.—A small-pox Hospital may spread infection by persons or clothing leaving the hospital in an infectious state. I know of no evidence to show that the premature discharge of any patient from the Dewsbury Hospital gave rise to other cases, *i.e.*, to so-called " return cases." It is possible that the infection of small-pox is lost at an earlier stage in the disease than is generally imagined. Some support is given to this view by the fact that the arrangements for discharging patients at the small-pox Convalescent Home were quite inadequate on the assumption that the Home contained persons in an infectious state. The method of discharge from the hospital itself was not incapable of improvement, at one time. In spite of this no case was traced to anyone discharged from the Convalescent Home or Hospital.

At one time the methods of disinfecting bedding, etc., from infected houses, conducted in the steam disinfector at the hospital, were unsatisfactory. The infected articles were introduced into one side of the Disinfecting Chamber and taken out at the same side, an altogether improper arrangement. But inasmuch as the " infected " and " disinfected " sides were in aerial communication, structural alterations had to be effected before employing the opposite or " disinfected " side of the apparatus. It was a fact that heaps of disinfected bedding were at times to be seen a few feet from piles of infected bedding, hence the value of disinfection of bedding as employed at one time at the hospital, was not very great. Still the only case that can be fairly ascribed to these faulty methods was as follows : a patient was admitted to hospital with a blanket from home, and a few days later this blanket, apparently after disinfection, was returned to the friends ; a fortnight after the return of this blanket, a member of this family developed a small-pox eruption and was removed to hospital. The first case was not the origin of the second, inasmuch as he had been removed to hospital some days before the second case received the infection which ultimately resulted in an attack of small-pox. Another explanation might be that infection had lurked in the house after the removal of the case, for the disinfection of houses at that time practised was confined to the infected room alone.

Towards the end of the year a Medical Officer of Health of a neighbouring County Borough wrote to state that in his opinion a letter from the Corporation's small-pox Hospital had been the source of infection of a case in his borough. Examination of the facts showed that he was in error, but they are instructive.

A parcel came from a neighbouring town addressed to our Small-pox Hospital, but on investigation and after opening the parcel, it was found that it ought to have been delivered at another Small-pox Hospital (I do not refer to the Mitchell Laithes Small-pox Hospital). It was sent there, and after the contents had been examined at the second Small-pox Hospital, they were returned to the town from which they started. A fortnight after the receipt of the parcel, the recipient's wife developed small-pox, and the apparent source was this parcel from a Small-pox Hospital.

Some persons were infected by visiting the Hospital in the course of their business. At one time tradesmen used to deliver goods inside the Hospital grounds, where they had opportunity of coming in contact with patients, as well as the staff who were infectious by reason of their clothing. In some cases small-pox did not develop in the person of the tradesman, but among his family.

Workmen were employed upon the extensions of the Hospital. Most of them were protected by previous small-pox or more or less recent vaccination, but one workman did develop the disease.

On one occasion a delirious patient escaped from the Hospital in the night, and was found within his brother's house in the town. The inmates of this house were his brother's wife, recently re-vaccinated, and a relative from near Wakefield, who subsequently developed small-pox on her return to her own home.

The last method by which the administration of the Hospital might have led to the spread of small-pox was the defective measures of disinfection adopted by the staff on the occasions of their going out on leave. But it must be stated that no cases have been traced to this. Latterly, more stringent regulations were drawn up, after a discharging block had been erected at the Hospital.

It may be mentioned under this heading that towards the end of September a new ward block, just completed, caught fire, and was completely destroyed. This led to the assemblage of a large number of spectators upon the hospital site, and a number of them contracted small-pox. It is of particular interest to note that in several instances the member of the family present at the fire did not contract small-pox but took the disease home to infect relatives. The fire resulted in three, four, and seven members of various families contracting small-pox.

(*b*) AERIAL CONVECTION.—It has been claimed that much of the small-pox in the adjoining district of Ravensthorpe has been due to the Dewsbury Corporation's Small-pox Hospital at Ravenswharf, on the boundary of the Dewsbury area. Much, at any rate, of the small-pox in Ravensthorpe may, with some confidence, be ascribed to another cause.

The arrangements for isolating Ravensthorpe cases of small-pox varied from time to time. There were no less than five different periods in succession during which these arrangements varied. If it can be shown that any rise or fall in number of notified cases in Ravensthorpe uniformly corresponded to a change in the conditions of isolation, a presumption arises that such rise or fall may have been due to the character of the isolation arrangements. The following show the arrangements, and the dates during which such conditions obtained :—

PERIOD.	ISOLATION ARRANGEMENTS.
(1) During 1904 until August 31st . .	Dewsbury Corporation Hospital.
(2) September 1st to 12th	Home Isolation.
(3) September 13th to 22nd . .	Dewsbury Corporation Hospital.
(4) September 23rd to Nov. 14th . .	Home Isolation.
(5) *a* November 15th to 25th . .	Crossley Hospital, Mirfield.
b November 26th onwards . .	Mitchell Laithes Hospital.

Cases *infected* during a certain week, say a week ending on the 1st of any month, will develop the rash of small-pox during the week ending the 15th of that month, *i.e.*, a fortnight later. One cannot say that all cases were at once recognised and removed to hospital as soon as the rash developed, but it is sufficiently accurate for our purposes to consider that approximately the same conditions would obtain throughout the epidemic, and that no very appreciable inaccuracy would be introduced by saying that cases infected during any week were notified during the week ending a fortnight later.

A table must therefore be made to show the nature of the isolation arrangements during any week, and the number of cases notified during the week ending a fortnight later. It will then be seen whether the rise and fall in number of cases notified corresponds in any way with the nature of the isolation arrangements obtaining in the district a fortnight previously.

TABLE IX.—*Showing the number of cases of Small-pox notified in the Ravensthorpe Urban District, during certain weeks in* 1904, *together with the nature of the isolation arrangements obtaining in the district during the week ending a fortnight previously.*

Week during which infection was received.	Nature of Isolation Accommodation in that week.	Corresponding week during which cases were notified.	Number o cases noti fied durin the corres ponding week.
From beginning of year to week ending July 16th, 1904.	Dewsbury Corporation Hospital.	From beginning of year to week ending July 30th, 1904.	6 (From beginnin of year.)
Week ending July 23rd	,, ,,	Week ending Aug. 6th	0
,, ,, 30th	,, ,,	,, ,, 13th	3
,, Aug. 6th	,, ,,	,, ,, 20th	4
,, ,, 13th	,, ,,	,, ,, 27th	8
,, ,, 20th	,, ,,	,, Sept. 3rd	11
,, ,, 27th	,, ,,	,, ,, 10th	9
,, Sept. 3rd	Home isolation, Sept. 1st to 12th.	,, ,, 17th	7
,, ,, 10th		,, ,, 24th	27
,, ,, 17th	Dewsbury Corporation Hospital, Sept. 13th to 22nd.	,, Oct. 1st	28
,, ,, 24th		,, ,, 8th	12
,, Oct. 1st	Home isolation from Sept. 23rd.	,, ,, 15th	25
,, ,, 8th	,, ,,	,, ,, 22nd	26
,, ,, 15th	,, ,,	,, ,, 29th	21
,, ,, 22nd	,, ,,	,, Nov. 5th	14
,, ,, 29th	,, ,,	,, ,, 12th	32
,, Nov. 5th	,, ,,	,, ,, 19th	15
,, ,, 12th	,, ,,	,, ,, 26th	23
,, ,, 19th	Crossley Hospital, Mirfield Nov. 15th to 25th.	,, Dec. 3rd	13
,, ,, 26th	,, ,,	,, ,, 10th	4
,, Dec. 3rd	Mitchell Laithes Hospital from Nov. 26th	,, ,, 17th	1
,, ,, 10th	,, ,,	,, ,, 24th	5
,, ,, 17th	,, ,,	,, ,, 31st	2

Small-pox did not become prevalent in an excessive degree in Ravensthorpe until after September 17th, a date which corresponds with the commencement of the first period of home isolation on September 1st.

This table shows that there is a general correspondence between rises in notifications and periods of home isolation, and falls in notifications with periods of hospital isolation. Owing to the fact that the ends of weeks and beginnings and ends of different methods of isolation do not coincide, there is a certain amount of overlapping, and the rises and falls do not quite absolutely coincide with the conclusions I have mentioned. But they are, I think, sufficiently identical to confirm the explanation I have put forward.

The epidemic subsided in a remarkable way as soon as the last period of hospital isolation was entered into. It must also be borne in mind that a population protected against small-pox was growing up.*

It is axiomatic, and therefore unnecessary of proof, that home isolation in houses where some of the inmates are unvaccinated is bound to lead to an increased number of cases, at any rate in the infected houses themselves. Then again, administrative deficiencies, in the shape of persons resorting to or going out of houses where the so-called home isolation is practised, must also of necessity lead to a dissemination of the disease.

This explains, to my mind, why Ravensthorpe suffered so severely from small-pox, but no evidence has been submitted that aerial convection did not play some part in spreading the disease, for air-borne infection might conceivably have been operating at the same time as the above influences (home isolation) were at work.

But an explanation is necessary as to the reason why small-pox spread in Ravensthorpe *when* it did. Up to the end of the week ending August 6th, 1904, six cases of small-pox had been notified in Ravensthorpe during 1904. During the period ending July 23rd, 1904 (deducting 14 days from the first date to allow for cases infected to have developed by August 6th), 143 cases of small-pox were treated in the Dewsbury Corporation Hospital, and only 6 Ravensthorpe cases at the very most could have resulted from this aggregation of cases at the Corporation Hospital. We find that when conditions changed, and Ravensthorpe cases could not be admitted to hospital, then the incidence of the disease in Ravensthorpe was severe.

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* I find that Dr. Laird, the Public Vaccinator, performed 612 primary vaccinations and 945 re-vaccinations in Ravensthorpe during 1904. Other medical men doubtless performed many vaccinations. The population of Ravensthorpe at the 1901 Census was 5,698. It was estimated at 5,840 in 1904, so that at least 26 per cent. of the population were vaccinated during the year, and some 5 per cent. of the inhabitants of Ravensthorpe developed small-pox. 2 per cent. of the people of Dewsbury contracted the disease.

It has been locally held in Ravensthorpe that small-pox became epidemic in that place because cases of that disease were treated at the Dewsbury Corporation's Small-pox Hospital in proximity to their district.

It is believed that to the Small-pox Hospital of the Dewsbury Corporation must be ascribed some influence in leading to the development of the disease in Ravensthorpe, but the grounds for believing this are different from those held in that place, for it appears to be not because cases were admitted to hospital but rather because Ravensthorpe cases were not admitted, and because home isolation had to be resorted to.

The last matter which remains to be discussed under this heading is the incidence of small-pox upon persons living within quarter and half-mile circles of the Hospital. Reference to the map which shows a red spot for each case of small-pox which was notified, reveals the fact that a very large number of the houses within a quarter of a mile of the Hospital produced cases of small-pox. The total number of inhabited houses within quarter of a mile of the hospital is 64 ; the number of invaded houses was 23, and the number of notified cases was 39. In 9 of these 39 cases the source of infection was not traced. The earliest case within this area was never notified, which may account of some of the untraced cases. Of the others, only 1 case was traced to this unnotified attack. If the map were to be considered solely as evidence for or against air-borne infection it should have been constructed to show infected houses and not, as it does, cases of small-pox.

Direction did not seem to be of any importance, as all points of the compass impartially show cases of the disease. Prevalent winds, therefore, as far as the quarter mile radius is concerned, had no influence. The same seems to be true for the half-mile radius, for Ravensthorpe in the one direction (south-west) and that portion of Dewsbury containing Whitley and Tweedale Streets (north-east) suffered with some severity. The prevalent winds are from the west. The only factor of importance was apparently that there should be an aggregation of dwelling-houses ; where that occurred the map shows an aggregation of small-pox cases, and this is true for several parts of the Borough considerably over half a mile from the Hospital, in one instance, a mile from it. Certain parts of the Borough, however, escaped very lightly, and these were the parts most remote from the Hospital. This uniform diffusion of infection all round the Hospital could be explained by the infection rising into the upper air and descending as a shower upon houses within a certain distance of the Hospital. It is not possible to say whether this occurred or not in Dewsbury. The physical conditions of the atmosphere under which this diffusion has been found to have occurred in some places are related to periods of calm, fog, and light winds. I have not been able to obtain meteorological records on this subject. Other sources of infection, such as direct contact with cases of the disease, were certainly present in many cases. Other cases could not be explained, but owing to the widespread nature of the epidemic few people could say certainly that they could not possibly have been exposed to infection. The argument that because the incidence of the disease is heavy upon a certain locality, then the Hospital may have been the cause of its infection may hold good to some extent in the case of certain streets near the Hospital, but in the case of Back Cliffe Street, fully a mile from the Hospital, 18 cases (of which 16 only were notified) occurred in 7 houses. Here case-to-case infection was proved in nearly every instance. In the same way in the Scout Hill neighbourhood, within the quarter mile radius, a large number of the attacks were traced to preceding cases. It should also be borne in mind that the Infirmary Fete in the Crow Nest Park on July 2nd and the Hospital Fire on September 25th, both took place not far from Scout Hill. These events have already been pointed to as factors in furthering the spread of infection. Other points favouring the development of small-pox in the Scout Hill area were that a number of the children who attended West Town School, associated with children there who developed small-pox in August and the early part of September; and also one case which developed was not notified until the day before his death, which took place in hospital. This man had been ill at home for a number of days, and had opportunity, therefore, of spreading the disease.

We are led to the conclusion that possibly air-borne infection may have operated in some cases, but that in the majority of the cases infection was traced to other sources. It may be mentioned again that opportunities of becoming infected in Dewsbury were so numerous that it was difficult to point definitely to any particular source of infection unless it were known that the case lived in the same house as, or had been in contact with, a person in an infectious condition. Dewsbury must, therefore, be regarded as a particularly unfavourable place for the study of air-borne infection from a Small-pox Hospital.

VI.—INFECTION BY COMING INTO CASUAL CONTACT WITH AN INFECTED PERSON. A number of cases were traced to sources of this description. Sometimes a few minutes' conversation in the street with a case of small-pox before it had been recognised, sometimes the fact of children playing with others whilst in an infectious condition resulted in an attack of small-pox. In one case, a person attended a funeral in another district of a person who had died of small-pox, and 15 days later small-pox developed. In another case a man watched the removal of a case from a street in another district and returned to Dewsbury infected, small-pox developing in due course. No doubt a number of the cases in which no source of infection was traced, contracted the disease in ways similar to the above.

VII.—INFECTION RECEIVED FROM UNASCERTAINED SOURCES. In a number of cases no probable source of infection could be identified. In part this may perhaps have been due to the inquiries made being not sufficiently exhaustive, but during the height of the epidemic much time could not be spared for investigating cases with obscure origins. But in part also, non-discovery of the origin of cases must be ascribed to information knowingly withheld, or to information given which was purposely misleading. The desirability of a penalty being imposed in such cases is great, but as the law stands, a householder is not bound to assist the public health staff in their attempts to elucidate the origin of a case of infectious disease.

At times accident revealed the source of infection of cases marked off as "unknown," sometimes after the lapse of several weeks.

When a person had been in contact with persons in an infectious condition in some place outside the district, and no help was afforded by the patient or his friends, the discovery of the source of infection was well-nigh impossible. It will be remembered that small-pox was present in all the surrounding districts, in some of which home isolation was practised for a considerable period.

An example of the class of what are "unascertained sources," may be quoted. A woman, M.W., left Dewsbury for Southport on a certain Saturday. During the next week she developed a rash and consulted a medical man in Southport. He told her to go home and stay in bed until the rash subsided. She accordingly returned to Dewsbury (with the rash out on her) on the next Saturday night, and on the Monday following, she was removed to the Dewsbury Small-pox Hospital. It is not known how many persons she infected between Southport and Dewsbury. No doubt all would be ascribed to unascertained sources.

Localities invaded by Small-pox.

Reference to the appended map shows the incidence of small-pox upon the various localities of the town. Only one point is deserving of comment.

It will be noted that the densely populated neighbourhood of Batley Carr has been but little attacked. The vaccination condition of this portion of the borough, as far as the children at any rate are concerned, is among the worst in Dewsbury. On page 56 is given the percentage of unvaccinated children attending Batley Carr Church School and St. Joseph's R.C. School. Experience derived from the behaviour of the epidemic in other parts of the town strongly suggests that much suffering and loss of life would follow the invasion of Batley Carr by small-pox. I imagine that this neighbourhood will remain in its present state of unbelief until it learns its lesson, which will, sooner or later, be given.

Mention has already been made of the incidence of small-pox upon houses in the neighbourhood of the Small-pox Hospital.

TABLE X.—*Shows the number of Houses in each street invaded by Small-pox and the number of Cases notified in each street during 1904.*

Name of Street.	Number of houses invaded.	Number of cases notified.
Ashworth Road	4	4
Asylum Road	4	5
Albion Street	3	4
Asman Square	1	2
Albert Terrace	1	1
Boothroyd Lane	6	9
Brooke Street	4	4
Back Brook Street	2	4
Barber Street	2	2
Back Barber Street	1	1
Bradford Road	2	2
Back Belgrave Street	2	3
Brunswick Street	1	1
Beckett Nook	1	6
Beckett Road	1	1
Battye Street	1	1
Bower Lane	1	1
Burgh Mill Lane	2	6
Bagshaw Street	1	1
Cliffe Street	1	1
Back Cliffe Street	6	13
Calder Bank Place	3	3
Calder Bank Road	2	2
Church Street	1	1
Clarke Street	1	1
Back Clarke Street	1	2
Crackenedge Lane	2	2
Lower Cross Street	2	2
Upper Cross Street	1	1
Cross Bank Street	1	2
Crow Nest Park	1	1
Camroyd Street	2	2
Cemetery Road	1	2
Charles Street	2	3
Croft Street	1	1
Central Street	4	5
Corporation Street	1	1
Daisy Hill	1	2
David Lane	1	1
South Elmwood Street	3	5
Elizabeth Street	1	2
Eightlands Road	2	2
Ernest Jones Street	1	1
Eddison Street	1	1

TABLE X.—*Continued.*

Name of Street.	Number of houses invaded.	Number of cases notified.
Fall Lane	15	19
Fearnley Street	7	11
Forge Lane	1	2
Firth Street	2	2
Feast Ground, Daw Green	1	2
George Street	6	10
Granville Street	4	4
Back Granville Street	2	3
Gladstone Street	2	2
Huddersfield Road	22	24
Heckmondwike Road	6	9
High Street	6	11
Halliley Street	2	7
Back Halliley Street	1	1
Hanover Street	3	3
Back Hanover Street	1	1
Hanover Square	1	1
Hartley Street	1	1
Highgate Road	1	2
Hemingway's Yard	1	1
St. John's Yard	1	1
Kent Street	2	2
Knowles Hill	1	1
Kiln Road	1	1
Kiln Street	1	2
Kensington Street	1	2
Back Kensington Street	2	2
Lawson Street	2	2
Back Lawson Street	3	5
Low Road	2	8
Lister Street	1	1
Lacy Street	1	1
Leatham Street..	1	2
Leeds Road	1	1
Mitchell Avenue	2	3
Middle Road	9	12
Marriott Street	2	5
Moor End Lane	1	1
Manor Road	1	1
Milton Street	2	2
Market Place	2	2
New Street	4	9
Back New Street	1	1
Oates Street	1	1
Princess Street	4	4
Pyrah Street	4	4
Back Pyrah Street	1	1
Pitt Street	3	7
Quarry Road	1	1
Railway Street	1	2
Back Ridgway Street	2	2
Ridgway Street..	2	2

TABLE X.—*Continued.*

Name of Street.	Number of houses invaded.	Number of cases notified.
Russell Street	1	1
Reform Street	1	1
Senior Street	3	4
Scargill Street	2	2
Back Scargill Street	1	1
Scout Hill	20	30
Staincliffe Road	5	8
Springfield Street	2	2
Springfield Terrace	1	1
Sizers Hill	2	2
Swallow Road	2	3
South Street	2	2
Sharp Street	1	3
School Lane	1	2
Scarr Hill Lane	1	1
Small-pox Hospital	1	2
Tweedale Street	10	13
Back Tweedale Street	2	2
Thornton Street	7	18
Back Thornton Street	1	1
Thornhill Road	13	20
Tentercroft Road	1	1
Travis Lacy Terrace	2	2
Upper Road	1	1
Union Street	1	1
Vulcan Road	3	3
Back Vulcan Road	2	3
Victoria Road	3	10
Back Victoria Road	1	1
Vicarage Road	1	1
Westgate	10	16
Whitley Street	5	6
Back Whitley Street	7	12
Workhouse	1	6
Woodbine Street	3	3
Whitworth Road	4	7
Wood Street	2	3
Watergate Road	7	11
Willans Road	2	2
West Vale	7	8
Wood Hill	2	2
Wakefield Road	2	2
Webster Hill	2	5
Wormald Street	1	1

ORIGIN AND PROGRESS OF THE EPIDEMIC.

The first case in 1904 occurred in the person of a man living in Westgate, and was notified on February 11th. A fortnight before the development of his illness he had been attending a football match in Liversedge where small-pox was present, and his infection is thought to have been probably contracted there. The second and fourth cases occurred in the same family as the first case, and the third and fifth cases in a household which is not known to have had any connection with the original case. These five cases were notified between February 11th and March 6th. An interval of 21 days then occurred before the next cases were notified on March 27th, and from that date onward, small-pox notifications were received practically daily (with three or four days' interval in a few cases) until July 4th. Then an interval occurred, but owing to the presence of a man with the eruption of small-pox upon him at a fete in the public Park on July 2nd (the date of his removal to hospital), a considerable number of cases were notified on July 18th and following days among persons who had also been present at the fete. This unfortunate occurrence no doubt served to keep up the infection of small-pox which might otherwise have died out. Cases continued to be notified almost daily until the end of the year. During the early weeks of 1905, 11 cases were notified up to the end of the week terminating on March 4th, 1905; none were notified between January 1st and 13th, nor between 17th and 29th, nor from January 31st to February 22nd, nor from March 5th to the date of this Report (April 30th).

The following tables show the number of small-pox notifications received each week and each month during the epidemic.

TABLE XI.—*Showing weekly number of Notifications of Small-pox.*

Week ending.		Small-pox notifications.	Week ending.		Small-pox notifications.
1904.			1904.		
January	2nd	..	April	2nd	11
,,	9th	..	,,	9th	10
,,	16th	..	,,	16th	12
,,	23rd	..	,,	23rd	11
,,	30th	..	,,	30th	22
February	6th	..	May	7th	10
,,	13th	1	,,	14th	7
,,	20th	..	,,	21st	8
,,	27th	2	,,	28th	1
March	5th	1	June	4th	3
,,	12th	1	,,	11th	7
,,	19th	..	,,	18th	3
,,	26th	..	,,	25th	1

Table XI.—*Continued.*

Week ending.	Small-pox notifications.	Week-ending.	Small-pox notifications.
1904.		1904.	
July 2nd	3	November 12th	24
,, 9th	3	,, 19th	10
,, 16th	..	,, 26th	16
,, 23rd	15	December 3rd	5
,, 30th	4	,, 10th	11
August 6th	7	,, 17th	14
,, 13th	11	,, 24th	5
,, 20th	13	,, 31st	5
,, 27th	10	1905.	
September 3rd	39	January 7th	2
,, 10th	41	,, 14th	3
,, 17th	10	,, 21st	2
,, 24th	35	,, 28th	..
October 1st	30	February 4th	2
,, 8th	10	,, 11th	..
,, 15th	37	,, 18th	..
,, 22nd	32	,, 25th	1
,, 29th	27	March 4th	1
November 5th	24		

The accompanying diagram shows in graphic form the weekly notifications of small-pox.

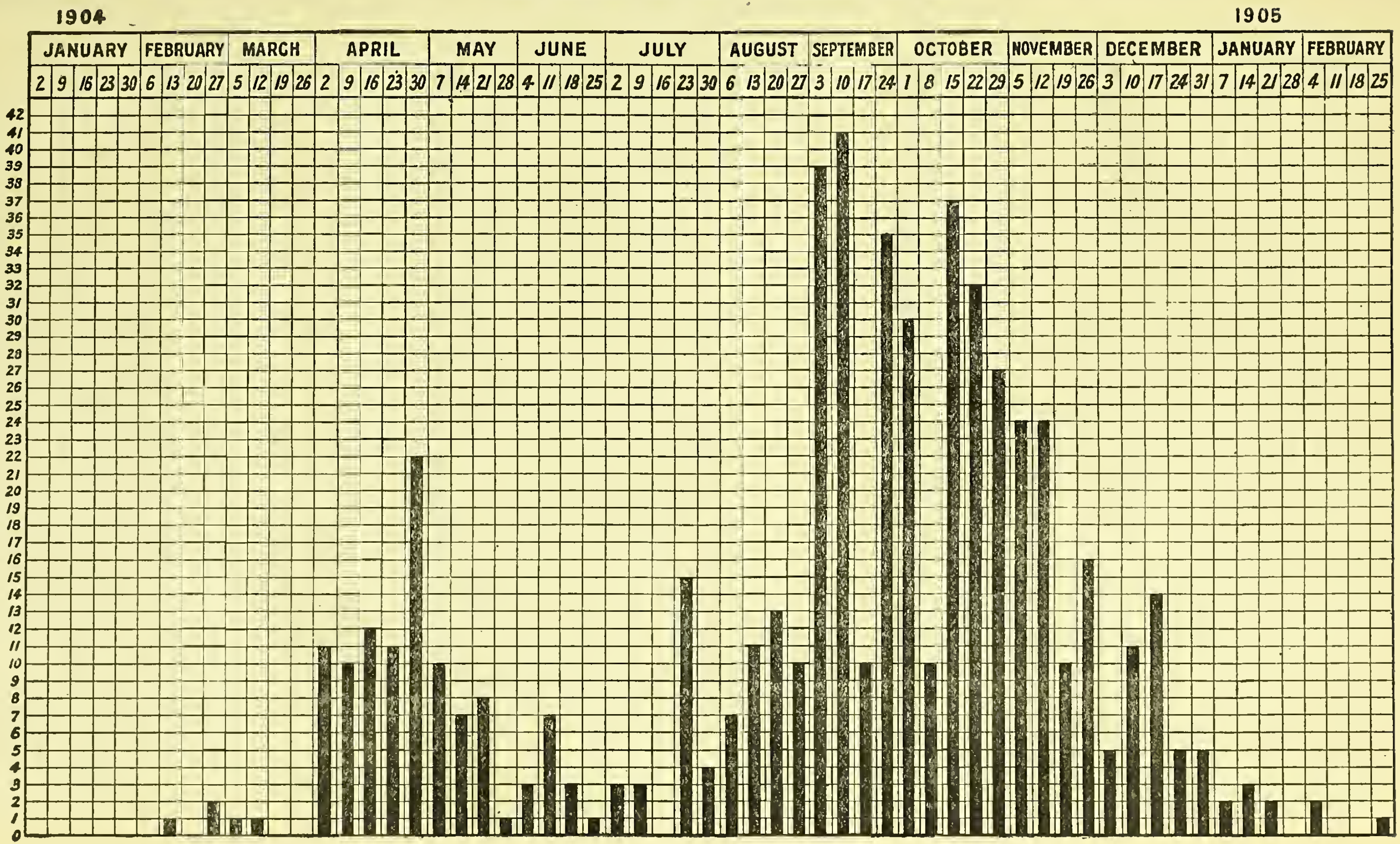
The following table shows the number of notifications of that disease received during each month.

Table XIII.—*Showing Monthly Notifications of Small-pox.*

Month.	Small-pox notifications.	Month.	Small-pox notifications.
1904.		1904.	
January	..	October	116
February	4	November	69
March	11	December	35
April	56	1905.	
May	28	January	9
June	14	February	1
July	23	March	1
August	55	April	0
September	141		

TABLE XII. WEEKLY NUMBER OF SMALL-POX NOTIFICATIONS IN THE BOROUGH OF DEWSBURY

From JANUARY 2nd, 1904, to FEBRUARY 25th, 1905.



PART II.

MEASURES TAKEN TO DEAL WITH THE EPIDEMIC.

The five essential measures in dealing with epidemics of small-pox are, in this country, vaccination, notification, isolation, disinfection and observation of the contacts. The subject of vaccination is dealt with in Part III. Notification has been already mentioned while considering concealment of cases. Hospital isolation of every notified case was practised during the whole of 1904, and to January, 1905, cases were moved to the Dewsbury Corporation Hospital at Ravenswharf, but in February that Hospital was closed, and cases occurring after that date were sent to the Mitchell Laithes Hospital of the Dewsbury Joint Hospital Board.*

Disinfection was practised in each case. To the latter part of October, as has been said, only the infected room and its contents were dealt with. After that date the whole house was disinfected. Contacts were kept under observation for 16 days after the removal of the case. A number of them developed small-pox and were detected in an early stage of the disease; they were at once removed to Hospital and in this way, no doubt, the opportunity of infecting others was removed.

Sanitary Staff.—By the end of October, 1904, the following staff were employed, all devoting their whole time to the work:—

1.—Medical Officer of Health.
2.—Sanitary Inspector.
3.—Assistant Sanitary Inspector.
4.—Inspector for Contacts.
5.— ,, ,,
6.— ,, ,,
7.—Disinfector for Houses.
8.— ,, ,,
9.— ,, ,,
10.—Disinfector for Contacts' Clothing.
11.—Disinfector for Bedding, &c.
12.—Male Attendant at Contact Reception Place.
13.—Female Attendant at Contact Reception Place.
14.— ,, ,, ,,
15.—Clerk.
16.—Driver for Ambulance.
17.— ,, Bedding Van.
18.— ,, Contacts Removal.
19.— ,, Dogcart for Staff.

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* The Sanitary Authorities constituting the Dewsbury Joint Hospital Board are the Borough of Dewsbury, and the Urban Districts of Ravensthorpe, Heckmondwike, Soothill Nether, and Soothill Upper.

All the above were recently vaccinated or had had small-pox, and in most cases their families were also protected by recent vaccination. No member of the sanitary staff contracted small-pox during the epidemic.

The Hospital staff is enumerated on page 89; the Hospital is described in Part IV.

A letter was sent to each medical man practising in Dewsbury, asking him to be good enough to send word by telephone or other rapid method to the Health Department as soon as he became aware of the existence of a case of small-pox. This was carried out in a very prompt manner by the medical practitioners in the town.

CHICKEN-POX was made a notifiable disease upon October 24th, 1904. Nearly every case of chicken-pox notified was visited by the Medical Officer of Health. In no case was the diagnosis found to be mistaken. As soon as chicken-pox became notifiable, a letter was sent to each medical practitioner, stating that it was the intention of the Medical Officer of Health to visit every case notified unless the notification was endorsed " not to be visited except in consultation." No certificates were endorsed in this way, but in some instances the case was visited in the company of the private medical attendant. 45 cases of chicken-pox were notified during the last two months of 1904.

On October 21st, 1904, the Local Government Board issued the *Dewsbury (Small-pox Prevention) Order*, 1904, on account of the disinclination of the Guardians of the Poor of the Dewsbury Union to perform their obligations under the Vaccination Acts and the Regulations of the Local Government Board. Briefly, the obligations which were omitted to be performed were :—

(*a*) Providing extra assistants to the Vaccination Officer.

(*b*) Providing Vaccination Stations for the convenience of persons wishing to be vaccinated or re-vaccinated, and for the saving of money, because the Public

Vaccinator receives a very much reduced fee for vaccinations performed at Vaccination Stations.

(*c*) The issuing of posters and handbills as to the advantages of, and arrangements for, vaccination and re-vaccination.

The attitude adopted by the Guardians was, apparently, that they had no objection to the Public Vaccinator himself providing places where vaccination could be performed ; but these were not Vaccination Stations provided by the Guardians, such as it was their duty to maintain during the existence of an epidemic of small-pox.

The following is a summary of the *Dewsbury Small-pox Prevention Order*, 1904, which takes away from the Guardians none of their rights and duties, but makes provision for some of them to be performed by the Corporation on account of the default of the Guardians :—

1. The Regulations are to be enforced and executed by the Dewsbury Corporation.
2. The Medical Officer of Health is to superintend the execution of the regulations.
3. The Corporation shall forthwith provide a place, referred to as a *Vaccination Centre*, at which persons may be gratuitously vaccinated or re-vaccinated. Other centres shall be provided as on the advice of the Medical Officer of Health are deemed necessary.
4. Public notices of the vaccination arrangements are to be given by handbill, placards, etc.
5. Vaccinators are to be appointed, of which the Public Vaccinator shall be one if he be willing to accept employment.
6. Every Vaccinator shall observe the " instructions to Vaccinators under contract " contained in Schedule III. of the Vaccination Order, 1898, as if he were a Public Vaccinator under contract with the Guardians.
7. Vaccinations performed under this Order must be duly registered in a Register as in Form O in the Fifth Schedule of the Vaccination Order, 1898.
8. The Corporation shall pay the Vaccinators such fees as may be arranged between them. No fee shall be payable for re-vaccination of persons under 10 years of age, unless the Medical Officer of Health advises it to be necessary.*

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* I think that this age might, with advantage, be reduced to 8 years n the presence of epidemic small-pox.

9. If the Medical Officer of Health advises it, medical practitioners shall be appointed as Medical Visitors, to act under his superintendence, and to visit houses in the Borough to inquire into the existence of small-pox and to report cases of small-pox or suspected small-pox.
10. Expenses incurred by the Corporation in the execution of the Regulations shall be deemed to be incurred in the execution of the Public Health Act, 1875, and may be defrayed accordingly.
11. A refusal to comply with a reasonable requisition of the Medical Officer of Health, a Vaccinator, or a Medical Visitor, shall be deemed to be a wilful obstruction, and punishable under Section 1 (3) of the Public Health Act, 1896.
12. The expression Medical Officer of Health in the Order includes any duly qualified medical practitioner appointed or employed by the Corporation to act in the execution of the Regulations.

This Order was to remain in force for a period of six months from October, 1904.

Before the making of this Order, Dr. Charles Hall, the Public Vaccinator, had opened what was practically a branch surgery near the Post Office, to act as a kind of private vaccination station. When the Order was issued, a room in the basement of the Town Hall was let by the Town Council in place of the above to Dr. Hall to be used for vaccination purposes. The fees for all vaccinations performed here were payable by the Guardians, provided that vaccinations were done in accordance with the conditions of his contract. But primary vaccinations under the age of 14 years could only be performed at the child's home, under his vaccination contract with the Guardians, so the Town Council opened a Vaccination Centre in Nelson Street, under the Dewsbury Small-pox Prevention Order, 1904. This was especially necessary, as a number of school children had to be vaccinated as a result of the inspection of the children's arms in the schools. The Centre was not opened till the middle of November, by which time the general demand for vaccination was slackening, as a result of the diminished prevalence of small-pox. Had the Order been issued and enforced in September, a very much larger number of vaccinations would, in my opinion, have been performed. As it was, the public and private vaccinators vaccinated a very large number of persons from that month (September) onwards.

In any future epidemic, if such there be, the early issue of the Order, in the event of the Guardians adhering to the views they held during this epidemic, would be a preventive measure of the utmost value. These remarks presume that vaccination remains under the local administrative control of the Guardians, but in my judgment vaccination is a subject which should be directly under the control of the County Councils or District Councils ; perhaps, in the case of Boroughs, it might be under the Borough Councils, and in other cases under the County Councils, with power to the Local Government Board of themselves stepping in to administer vaccination measures on the default of any body upon whom the duty of enforcing vaccination lies.

MEASURES TAKEN UPON THE OCCURRENCE OF A CASE OF SMALL-POX.

Upon the receipt of a Notification of Small-pox, the Medical Officer of Health in most cases at once visited the house to see the case and to offer vaccination to the inmates. At one time the Vaccination Officer and the Public Vaccinator used to receive lists of names of contacts, but it was found that the time of the Public Vaccinator was so taken up with attendance for vaccination purposes at his surgeries and the vaccination centre, that it was difficult for him to visit all the contacts on the day the case occurred. Hence the duty was undertaken by the Medical Officer of Health. Inquiries were also made as to the source of infection of the case. These inquiries were continued by the Sanitary Inspector or Assistant Sanitary Inspector who superintended the removal of the case. In the meanwhile the Ambulance, Contact Conveyance and Bedding Van had been summoned, and after the removal of the patient to hospital, of the contacts to the Contact Reception premises at the Town Yard (the George Street Depot), and of the bedding to the steam disinfector at the hospital, the disinfection of the whole house was commenced. As a rule one man effected the collection and dispatch of the articles to be disinfected by steam, and the selection of those articles which, it was judged, had best be fumigated on account of their texture. These latter articles were then placed in a room of the house which had, in the meanwhile, been sprayed out with

Formalin solution (1-80) by other disinfectors, and were fumigated with sulphur dioxide or Formalin gas. All the walls, ceilings, floors and furniture in the house were sprayed with Formalin solution (1-80), an operation which took from one to two hours, or longer, depending on the size of the house. The spraying apparatus used was Lumley's " Invicta " Disinfecting Sprayer. It is worked by pumping in air till a pressure of 15 lbs. to the square inch is recorded on the gauge. Then, without disconnecting the forcing pump, Formalin in the required strength is pumped in till the pressure reaches 45 lbs. to the square inch. The pump is then disconnected, and replaced by the flash tube and nozzle attachment. Formalin solution is continuously ejected as a fine spray for approximately 20 minutes without pumping or recharging. The tank can then be rapidly refilled by pumping in more fluid. The apparatus is a very convenient one and proved satisfactory in practice. It can be easily slung over the back and so is quite portable.

In the meanwhile the contacts had been taken to the Contact Shelter at the Depot, where they received a hot bath to which some disinfectant fluid such as " Killgerm " had been added. While they were having their bath all their clothes were taken to the adjacent steam disinfector and disinfected. The arrangement of the rooms at this place was as follows, arranged in duplicate for men and women (and children) :—

The contacts entered the receiving room, which was provided with a w.c., to await their turn for a bath. From this receiving room, the undressing room opened off, and from this the room containing the bath was reached. Beyond was the dressing room, in which the bather waited, wrapped in blankets, for his disinfected clothes. Infected clothes were carried by the attendant in a covered receptacle to the Disinfector and returned to the wearer in another receptacle after disinfection. When an attendant was dealing with infected persons or articles overalls were worn. In this way opportunities of re-infection of disinfected articles were reduced to a minimum. As soon as the contact was dressed he could proceed to the " disinfected " waiting room, also furnished with a w.c., to wait the disinfection of the rest of his family. The whole of the rooms, except the latter, which contained a stove, were well warmed with radiators, fed from the boiler at the steam disinfector which adjoined. The staff employed here was one male attendant, two female attendants, and one engine man for the disinfecting apparatus.

It was arranged that each person should remain in the bath 10 minutes, and that his clothes should be in the disinfector 20 minutes (during the first 10 of which he was in the bath) so that little time was lost, and provided a large number of persons were not waiting their turn, the person who came to be disinfected could leave the place well under an hour from the time he entered. It was calculated that a family containing two adults and three or four children could be dealt with in about an hour, so that by the time they returned home the disinfection of their house, excepting the one room in which certain articles were being fumigated, was completed.

The arrangements at the contact reception place were comfortable, and on the whole, a visit to the place was popular, the hot bath being much enjoyed. At no time was any trouble experienced in getting people to go there with the exception of one or two cases, who were, however, ultimately persuaded. From the date of opening this place towards the end of October, to the end of January, 617 persons were dealt with.

A separate steam disinfector was used for the bedding, etc., situated at the Small-pox Hospital at Ravenswharfe, while the contact premises were in the heart of the town. The bedding was promptly returned, after disinfection, in a separate cart.

It took a little time to get all these arrangements into full swing so that householders should be subjected to the minimum amount of waiting and inconvenience, but when all arrangements had been made, house after house could be dealt with on the same day, with great rapidity. Unless a case was notified at 10 or 11 p.m. (and even then the case was practically always removed as soon as it was notified) houses and contacts were dealt with forthwith. In some cases where the house had to be left till next morning, Inspectors watched it all night to make sure that no one went in or out. Such instances were few, however. This system necessitated the Sanitary Inspectors, Disinfectors, and Drivers working until a very late hour, but it was felt to be imperative to deal with each day's work as it occurred.

Contacts were visited every other day for about nine days from the occurrence of the case, and then daily until the sixteenth day after the removal of the case.

Such, in outline, was the method of dealing with a case of small-pox and the contacts.

A few additional points of information should be mentioned.

Every notified case was removed to hospital in the Corporation's ambulance, which was disinfected daily. A Nurse practically always, from October, accompanied the ambulance ; before that month a nurse accompanied the ambulance when it was thought to be necessary. Crowding of neighbours and others near the ambulance to witness the proceedings was prevented as far as possible by the Sanitary Inspector who supervised the removal.

The steam disinfectors were those made by Messrs. Goddard, Massey and Warner, of Nottingham. The bedding van was a covered zinc-lined two-wheel van, specially constructed by Messrs. Cheetham and Co., of Bradford and Dewsbury.

The address of small-pox cases was sent daily to the Vaccination Officer and the Public Vaccinator (except in those cases where the Medical Officer of Health himself vaccinated), the Clerk to the Education Committee, and the Free Library. At one time the Caretaker at the Public Baths was also informed.

Frequent house-to-house visits in the neighbourhoods where small-pox was occurring, and indeed in most parts of the Borough, were paid by the Inspectors of Contacts, in order to make enquiries as to cases of illness, and to urge vaccination and re-vaccination. In this latter respect, they performed some of the duties of vaccination officers. Notices were not sent to employers of labour that persons in their employ were suffering from small-pox or had the disease in their family, but in many cases, on account of their absence from work for disinfection, the fact was known, and the employers either kept the workers away from work for a fortnight, or insisted on a certificate of disinfection being procured from the Medical Officer of Health. This was given in the accompanying form :—

Health Department,
Town Hall,
Dewsbury.

....*190*

This is to Certify *that*..

residing at..

has had h Clothing disinfected and can now follow h employment.

....
Medical Officer of Health.

Owing to the stopping of work of contacts by some employers on the occurrence of small-pox in a family, the Town Council arranged to supply necessitous contacts with coals, food, etc., during the period their work was stopped. I advised the Sanitary Committee to do this, really the work of the Guardians, only in those cases where every one would consent to be vaccinated, if the operation were advised by me. The Town Council, however, would not agree to this. My view was that contacts should make some return for the benefits which they were to receive at the hands of the Council, and that if they were unwilling to make this return, they should receive no benefits, but this was judged to be coercion. If this be so, practically every small-pox preventive measure is coercion or so nearly allied to it as to be indistinguishable from it. None the less these so-called coercive measures are necessary if it is wished to combat an epidemic. If everyone is to reason for himself which measures shall or shall not be complied with, the probability of any early cessation of an epidemic of small-pox is not great. This simply means that the efficiency of the measures adopted reaches no higher level than that of the intelligence of the least instructed inhabitants.

The following circular was sent to the larger employers of labour in the Borough to urge the vaccination of their workpeople.

BOROUGH OF DEWSBURY.

HEALTH DEPARTMENT,
TOWN HALL,
DEWSBURY, *Nov.* 1904.

Messrs.

DEWSBURY.

DEAR SIRS,

I should be glad if you can give me any assistance in procuring the vaccination of the people who work for your firm.

The occurrence of cases of small-pox among people working in mills, work-rooms, etc., is apt to cause a disturbance of business, especially if such cases have worked on your premises whilst in an infectious condition.

Doubtless, if you used your influence with your employees, some of them might be persuaded to be vaccinated.

I need hardly point out that the temporary discomfort of vaccination is not to be compared with the inconvenience that must follow the discovery that a person had worked on your premises whilst suffering from small-pox.

I have never met with a case where anyone who had been *recently* successfully vaccinated *before exposure to infection*, has contracted small-pox.

I would ask, therefore, for your co-operation in this important matter.

I am,
Yours faithfully,
J. SPENCER LOW,
Medical Officer of Health.

In some cases where suspicion of commencing small-pox arose, the patient's wages were paid by the Council, for a day or two, until the diagnosis was settled one way or the other, on condition that the patient and other members of the family took such precautions as might be advised. This precautionary measure was a useful one.

The following were widely distributed as handbills and placards all over the Borough.

BOROUGH OF DEWSBURY.

SMALL-POX AND VACCINATION.

1.—Small-pox is one of the most loathsome and terrible of diseases.

2.—Unvaccinated children under one year old who get small-pox nearly always die.

3.—Doctors and nurses who are more exposed to the infection of small-pox than any other class, do not suffer from small-pox, because they are always recently vaccinated.*

4.—The only trustworthy protection against small-pox is efficient vaccination. The good effects of vaccination done in infancy wear out in time. Vaccination should therefore be done again.

5.—As small-pox is now so prevalent in Dewsbury, everyone who has not been vaccinated within the last few years should be vaccinated again. If everyone in Dewsbury were vaccinated to-day, the epidemic would be over in a fortnight.

6.—It is better to have four vaccination marks on your arm, than hundreds of pock marks on your face and all over your body, besides possibly losing your eyesight.

7.—You are advised to ask your friends who have been in the Small-pox Hospital what they thought of the difference between patients who had been vaccinated when they were children, and those who had never been vaccinated at all.

8.—Arm-to-arm vaccination is now done away with, and there is no fear that any other disease can be given by vaccination, if the arm is kept free from dirt and irritation.

9.—An unvaccinated person is a danger, not only to himself, but to his neighbours.

By order of the Sanitary Committee,

H. ELLIS, *Town Clerk.*

J. SPENCER LOW, *Special Medical Officer.*†

TOWN HALL, DEWSBURY,
October 25th, 1904.

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* This paragraph has been adversely criticised by certain anti-vaccinators; I should perhaps have lengthened the sentence by adding the words, "but when, for any reason, they neglect this precaution, or the operation is unsuccessful, they suffer as much as anyone else." I thought that this addition would be an obvious inference. J. S. L.

† My appointment as Medical Officer of Health is dated November 16th; previous to that date my designation was Special Medical Officer for Small-pox Purposes.

Borough of Dewsbury.

PREVENTION OF SMALLPOX.

WARNING!

A number of cases of small-pox have been traced to persons visiting sick friends and neighbours before the disease has been recognised as small-pox.

People are earnestly warned of the danger of this practice, not only to themselves, but to their children.

Everyone is therefore urged to refrain from visiting houses where any cases of sickness are occurring, until a doctor has said that the disease is not small-pox.

Any person suffering from headache, backache, pains in the limbs, and feverishness is advised to call in a doctor in case small-pox is commencing. Anyone suffering from spots on the face, arms, and legs should do the same, as they may be due to small-pox.

J. SPENCER LOW,
Medical Officer of Health.

Town Hall,
Dewsbury, 18*th November*, 1904.

Small-pox has been known to spread by means of funerals of small-pox cases. In Dewsbury, however, all small-pox deaths occurred in hospital (with the exception of a dead baby removed to the Hospital mortuary), and the coffining was performed by the Sanitary Officials. There was little risk of spread of infection in this way, as the Sanitary Officials supervised the funeral, the Hospital being situated on an unused portion of the cemetery. The relatives witnessed the ceremony at some distance from the grave. In this connection it may be mentioned that one case in Dewsbury was traced to attendance at a funeral in an adjoining district.

Vaccination Inspection of the Children attending the Elementary Schools in Dewsbury.

Early in November, 1904, I thought it desirable to institute an enquiry into the proportions of vaccinated and unvaccinated children attending the Elementary Schools in the Borough, not only because the information obtained would, I thought, be very instructive, but also in order that measures might be taken to induce parents of unvaccinated children to have them protected against small-pox.

The Education Committee of the Borough were communicated with, and every assistance, both on their part and on the part of the Officials of the Department and the Teachers was cordially rendered.

It should be stated that, contrary to what has been said by some, the element of compulsion did not enter into the matter at all. Anyone whose children were found to be unvaccinated and who desired them to remain in that state have at the present time the responsibility of keeping their children unprotected against small-pox. Their statutory obligation—in the absence of exemption certificates—still remains, but as far as the Sanitary Authority is concerned, nothing more remains to be done.

I performed about one-third of the inspections and the services of Dr. G. St. C. Stockwell were secured to finish about two-thirds of the work which I had left uncompleted. Dr. Stockwell suggested that various further points should be brought out in detail, and he accordingly investigated the proportion of children who had been re-vaccinated, and the proportion of children who had been *recently* vaccinated for the first time. He obtained some very interesting results, as will appear from the following pages, which contains his figures combined with mine, as far as the information we collected could be correlated. On some points, however, Dr. Stockwell's figures are alone the basis of my remarks, as my returns do not contain information on one or two matters.

TABLE XIV.—*Showing number of Vaccinated and Unvaccinated Children present in each School at the date of Inspection :—*

Name of School.	Department.	Date of Inspection.	Number present.	Number Unvaccinated.	Percentage Unvaccinated.	Remarks.
St. Matthew's, West Town.	Boys'	1904 Nov. 16	69	14	20.29	18 children had had small-pox : 16 had never been vaccinated. 1 was vaccinated *two days before* the rash appeared. 1, aged 11 years, showed three marks of vaccination in infancy
	Girls'	,,	74	12	16.2	
	Infants'	,,	53	13	24.5	
Eastborough Council School	Boys'	Nov. 11	230	98	42.6	One unvaccinated child had had small-pox.
	Girls'	Nov. 17	174	69	39.6	
	Infants'	,,	91	42	46.1	

TABLE XIV.—*Continued.*

Name of School.	Depart-ment.	Date of In-spection.	Number present.	Number Un-vaccin-ated.	Per-centage Unvac-cinated.	Remarks.
Carlton Road Council School.	Boys' Girls' Infants'	Nov. 23 and Nov. 24	210 199 77	61 53 27	29.04 26.6 35.06	2 children had had small-pox : 1 had never been vaccinated. 1 was not vaccinated until some days *after* exposure to infection.
Boothroyd Lane Council School.	Boys' Girls' Infants'	Nov. 24 and Nov. 25	216 196 141	53 48 52	24.5 24.5 27.1	22 children had had small-pox : 20 had never been vaccinated. 1 was not vaccinated until two days before the rash appeared. 1, aged 11 years, was stated to have been vaccinated, but showed no marks.
Jubilee Council School.	Boys' Girls' Infants'	Nov. 21 ,, ,,	121 162 81	35 41 34	28.9 25.3 41.9	11 children had had small-pox : None had ever been vaccinated.
St. Joseph's R.C. School, Batley Carr.	Boys' Girls' Infants'	Nov. 17 ,, ,,	47 43 45	26 22 29	55.3 51.1 64.4	None present had had small-pox.
St. Paulinus R.C. School, WestTown	Mixed Infants'	Nov. 10 ,,	253 116	35 26	13.8 22.4	8 children had had small-pox : 5 had never been vaccinated. 3 were vaccinated some days after exposure to infection.
St. John's, Dewsbury Moor.	Boys' Girls' Infants'	Nov. 18 ,, ,,	58 72 70	17 18 30	29.3 25.0 42.8	7 children had had small-pox, 6 had never been vaccinated, and 1, aged 13 years, was vaccinated in one mark in infancy.
Dewsbury Moor Council School	Boys' Girls' Infants'	Nov. 18 ,, Nov. 21	112 105 79	56 51 30	50.0 48.5 37.9	3 children had had small-pox, none had ever been vaccinated.
Parish Church School.	Boys' Girls' Infants'	Nov. 9 ,, ,,	202 148 68	37 37 22	18.3 25.0 32.3	4 children had had small-pox, none had ever been vaccinated.
Batley Carr Church School	Mixed Infants'	Nov. 11 ,,	163 87	69 34	43.3 39.0	None present had had small-pox.
TOTAL ..	..	..	3762	1191	31.65	76 had had small-pox : 67 had never been vaccinated. 6 were vaccinated after infection by small-pox. 3 had been vaccinated (one showed no marks).

The 3,762 children inspected comprised 1,191 unvaccinated and 2,571 vaccinated children.

The number of children who were infected with small-pox at the time they were unvaccinated was 73, *i.e.*, 19.4 per 1,000 of the children inspected, a figure which is almost identical with that of the attack rate of the whole population.

The number of vaccinated children who had contracted small-pox was 3, *i.e.*, 1.1 per 1,000 of the children inspected.

The number of children *vaccinated within* 10 *years* who contracted small-pox was nil.

The number of children in the vaccinated class is more than twice as numerous as those in the unvaccinated class, while the number of cases of small-pox among unvaccinated children is 25 times greater than the number of vaccinated children who contracted small-pox.

If the proportion of small-pox cases in the vaccinated and unvaccinated classes had been the same, and the unvaccinated class, as it did, had furnished 73 cases, then the vaccinated class ought to have furnished 157 cases. It actually did furnish 3 (one of whom showed no marks of vaccination). All these children were in Standard VI., hence their protection against small-pox acquired in infancy must, from their ages, have become weakened through effluxion of time. Actually, no child had had small-pox who had been vaccinated during the preceding 10 years (unless already infected with small-pox at the time they were vaccinated) a very noteworthy condition of affairs where 76 are placed in the opposite category.

It should be clearly understood that these 76 children merely represent the number actually present who were ascertained to have previously had small-pox in this or in former epidemics. Others were either in the Small-pox Hospital, or absent from school from other causes.

In regard to 2,495 of the children inspected, note was taken by Dr. Stockwell as to the numbers of those who had been re-vaccinated, and also those who had been *recently* vaccinated for the first time.

The age or recency of the scar was judged by its appearance, and from questioning the child or teacher. Roughly, it means any child vaccinated during the course of the late epidemic (1904).

The total number of re-vaccinations was 162.

The number of recent primary vaccinations was 808, out of a vaccinated total of 1,662. It is interesting to note that the numbers of non-recent primary vaccinations, the recent vaccinations, and those not vaccinated at all are very similar, namely, 854, 808, and 833.

From these figures we find the following proportions :—

Vaccination status.	At beginning of epidemic.	At date of inspection.
Recently vaccinated ..	..	$\frac{1}{3}$
Vaccinated in infancy ..	$\frac{1}{3}$	$\frac{1}{3}$
Unvaccinated	$\frac{2}{3}$	$\frac{1}{3}$

In order to further reduce the unvaccinated third, a circular urging vaccination was sent to parents of unvaccinated children, and, after allowing sufficient time for action to be taken by the parents, they were visited at home and inquiry made as to the action taken or contemplated, the result of the visit being tabulated as " refused," " promised," " doubtful," or " vaccinated." After a further period they were again visited and the result was finally marked off as " vaccinated " or " refused."

In some cases the parents got their children vaccinated forthwith on learning of the inspection, without waiting for circulars or visits. The number was further improved by the vaccination of school children who happened to become contacts in the interval between the inspection and the compilation of the results of the circular, which ran as follows :—

BOROUGH OF DEWSBURY.

HEALTH DEPARTMENT,
TOWN HALL,
DEWSBURY, *November* 1904.

DEAR SIR OR MADAM,

On inspecting the school children in the Borough, I find that you have an unvaccinated child attending school.

I strongly urge you to have that child vaccinated in order that it may be protected against small-pox.

Small-pox in unvaccinated children is very often fatal.

Vaccination will be performed free of charge at the Vaccination Centre, No. 7, Nelson Street, between the hours of 12.30 and 1.30 p.m., except on Saturdays, when the hours will be from 12 to 2 p.m. (There will be no attendance on Sundays).

I hope you will take or send your child there, or to your own doctor, as soon as possible, for the purpose of vaccination.

I am,
Yours faithfully,
J. SPENCER LOW,
Medical Officer of Health.

Name of Child............................

Please take this letter with you to the Vaccination Centre.

A number of children attend school in Dewsbury but reside in adjoining districts. No enquiry has been made to ascertain the result of the circulars sent to parents of such children. A number of them have doubtless now been vaccinated,so to this extent the following table of the results of visits after the issue of the circular is improved.

TABLE XV.—*Showing results of Circularising and Visiting Children found to be Unvaccinated at Inspection of School, in different age groups.*

INFANT DEPARTMENTS.				
	OF THOSE WHO WERE UNVACCINATED.			
Number Unvaccinated at inspection.	Number since Vaccinated.	Number Refused.	Number found to have had small-pox at inspection.	Number out of district (not visited).
339	80	200	18	41

STANDARDS I., II. and III. (Boys and Girls.)				
	OF THOSE WHO WERE UNVACCINATED.			
Number Unvaccinated at Inspection.	Number since Vaccinated.	Number Refused.	Number found to have had small-pox at inspection.	Number out of district (not visited).
531	129	303	25	74

STANDARDS IV., V., VI. and VII. (Boys and Girls.)				
	OF THOSE WHO WERE UNVACCINATED.			
Number Unvaccinated at Inspection.	Number since Vaccinated.	Number Refused.	Number found to have had small-pox at Inspection.	Number out of district (not visited).
321	57	181	30	53

TABLE XVI.—*Showing above results combined together.*

Number Unvaccinated at Inspection.	OF THOSE WHO WERE UNVACCINATED.			
	Number since Vaccinated.	Number Refused.	Number found at Inspection to have had Small-pox.	Number out of district (not visited).
1191	266	684	73	168

Mention has already been made of the 73 children who contracted small-pox while unprotected by vaccination and of the 3 vaccinated children who did develop it. Reference to Part IV., where the mortality from small-pox among children is given, shows that to leave 73 unvaccinated children alive after suffering from small-pox a larger number is required to be attacked. This should be compared with the mortality among vaccinated children.

A somewhat extraordinary result appears from analysing the results of inspection given in Table XIV. Apparently St. Joseph's (R.C.) School, Batley Carr, Batley Carr Church School and Eastborough Council School, the three schools with the highest unvaccinated rates had between them only one child in attendance on the date of inspection who had had small-pox. Surely, it may be argued, these schools should have suffered severely from small-pox.

The explanation is that the high vaccination rates of most of the schools are *direct consequences* of the number of cases of small-pox in them. Where playmates have contracted the disease, parents in a large number of instances, sometimes at the representations of the children themselves, have permitted them to be vaccinated. It became an ambition among the children to be entitled to wear a red ribbon upon their left arms.

The percentage of unvaccinated children at the three schools above mentioned are something like those which obtained at nearly every school in the Borough at the beginning of the epidemic. Batley Carr (like the Borough of Batley) and Eastborough are localities in which small-pox has been prevalent only to a slight degree during the present epidemic, with the exception of a localised outbreak in Eastborough in one back street, which is a *cul-de-sac*, and therefore not presenting the same opportunities of intercourse with the general public as streets which are thoroughfares leading elsewhere. In connection with the slight incidence of small-pox upon schools with a high unvaccinated rate, cause and effect must, therefore, be carefully distinguished. In a word, the high unvaccinated figures are the *effect* and not the *cause* of the absence of small-pox in children attending the Eastborough and the two Batley Carr Schools.

It is interesting to enquire whether the children in the various standards are equally protected against small-pox or not. I have, therefore, arranged the different standards of the various schools into groups ; three classes are formed, namely :—(*a*) Infants; (*b*) Standards I., II. and III. combined ; (*c*) Standards IV., V., VI. and VII. combined ; the number of boys and girls being added together.

The effect of this is seen in the following table, from which it appears that on the whole of the 3,762 children inspected, 36.2 per cent. of the Infants and 34.1 per cent. of children in Standards I., II. and III. were unvaccinated, while 24.7 per cent. of those in Standards IV., V., VI. and VII. were unvaccinated.* This tallies with the facts known, namely, that of recent years vaccination has become more and more neglected in Dewsbury.

TABLE XVII.—*Showing the School Children inspected in three groups* (*a*) *Infants ;* (*b*) *Standards I., II. and III. combined ; and* (*c*) *Standards IV., V., VI. and VII. combined, with the percentage of Unvaccinated Children in each group.*

INFANT DEPARTMENT.			STANDARDS I., II. and III. (Boys and Girls.)			STANDARDS IV., V., VI. & VII (Boys and Girls.)		
Number Present.	Number Un-vaccinated.	Percentage Un-vaccinated.	Number Present.	Number Un-vaccinated.	Percentage Un-vaccinated.	Number Present.	Number Un-vaccinated.	Percentage Un-vaccinated
908	339	36.2	1557	531	34.1	1297	321	24.7

* These percentages are arrived at from the results at the inspection. They are now lower as a result of the circulars sent to parents.

The following table shows the numbers of *recent* primary and infantile vaccinations in each of the above groups in certain schools. (This matter was not investigated in all the schools).

TABLE XVIII.—*Showing amount of Infantile and recent Vaccination among the Children in certain Schools, at the date of inspection.*

INFANT DEPARTMENTS.

Number Present.	Of those Present.				
	Number Vaccinated in Infancy.	Number recently Vaccinated.	Percentage Vaccinated in Infancy.	Percentage recently Vaccinated.	Percentage Unvaccinated.
637	199	181	31.2	28.4	40.4
Total Vaccinated	380		..		..
Percentage Vaccinated	..		59.6		..

STANDARDS I., II., AND III.

Number Present.	Of those Present.				
	Number Vaccinated in Infancy.	Number recently Vaccinated	Percentage Vaccinated in Infancy.	Percentage recently Vaccinated.	Percentage Unvaccinated.
1013	311	352	30.7	34.7	34.6
Total Vaccinated	663		..		..
Percentage Vaccinated	..		65.4		..

STANDARDS IV., V., VI., AND VII.

Number Present.	Of those Present.				
	Number Vaccinated in Infancy.	Number recently Vaccinated.	Percentage Vaccinated in Infancy.	Percentage recently Vaccinated.	Percentage Unvaccinated.
845	344	275	40.7	32.5	26.8
Total Vaccinated	619		..		..
Percentage Vaccinated	..		73.2		..

The same result appears as before, namely, that the younger children are less protected against small-pox than the elder ones.

These figures are combined in the following table, which still refers however only to those schools in which the difference between infantile and recent vaccination was noted. The table includes however, two-thirds of the children inspected.

Table XIX.—*Showing amount of Infantile and Recent Vaccination among Children in certain Schools at the date of Inspection.*

Number Present.	Of those Present.				
	Number Vaccinated in Infancy.	Number recently Vaccinated.	Percentage Vaccinated in Infancy	Percentage recently Vaccinated.	Percentage Unvaccinated.
2495	854	808	34.2	32.3	33.3
Total Vaccinated	1662		..		..
Percentage Vaccinated	..		66.5		..

It only now remains to be explained that 880 school children were absent on the dates of inspection. Inquiry as to their vaccination status led to the following result :—

Table XX.—*Showing Vaccination Status of School Children who were absent when their School was inspected.*

Number Absent.	Of those who were Absent.		
	Number Vaccinated.	Number Unvaccinated.	Percentage Unvaccinated.
880	568*	312†	35.4

The 312 unvaccinated children were then visited after their parents had had circulars sent to them, and the following results were obtained :—

---

* Of whom 2, aged seven and nine years respectively, had had small-pox

† Of whom 33 had had small-pox.

TABLE XXI.—*Showing the results of circularising parents of the above Unvaccinated Children.*

Number of absent children who were Unvaccinated.	OF THOSE WHO WERE UNVACCINATED.			
	Number since Vaccinated.	Number refused Vaccination.	Number who had had Small-pox.	No information (out of Borough).
312	134	113	33	32

These results were therefore very encouraging, such a large number consenting to accept vaccination.

Combining the whole results obtained, adding together the number of absent children to those present at the time of inspection, we get the following :—

TABLE XXII.—*Showing present Vaccination Condition of* 4,642 *Children attending the Elementary Schools in Dewsbury.*

Total Children.	NOT HAD SMALL-POX.		HAD SMALL-POX.		Residing out of Borough (not visited).
	Vaccinated.	Un-vaccinated.	Vaccinated.	Un-vaccinated.	
4642	3534*	797†	5‡	106‖	200§

At least 17 per cent. of the children attending the elementary schools in Dewsbury are known, therefore, to be unvaccinated. If all the children residing out of the Borough who were not visited remain unvaccinated, the percentage is raised to 21 per cent. In round numbers one may estimate that some 20 per cent. of the school children are now unprotected against small-pox.

It should not be thought that this 20 per cent. are all children of anti-vaccinators. A considerable proportion of their parents should rather be classed as "indifferent." Many gave as their reason for not having their children vaccinated, after promising to have it done, that "the epidemic was over." Should another outbreak occur, it would not, I think, be a matter of great difficulty to get many of these children vaccinated.

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* 1 subsequently developed small-pox (age 11 years).

† Of whom 6 subsequently developed small-pox.

‡ 1 aged 7 and 1 aged 9 years, and 3 over 10 years of age.

‖ Including those vaccinated *after* infection by small-pox.

§ All unvaccinated at inspection of schools. Those found to be vaccinated are included in the second column. Others are doubtless now vaccinated.

PART III.

THE EFFECTS OF VACCINATION.

Before considering the effect which vaccination, or the want of it, had upon the progress or decline of the epidemic, it is necessary to state clearly what is claimed for vaccination.

1. Vaccination, to have any effect at all, must be properly performed, *i.e.*, at least three marks, and *preferably four*,* should be produced, in order that the protective influence should be retained for the maximum period.

2. The operation must be successful, *i.e.*, it must " take." A number of patients who claimed to have been vaccinated in infancy, some three times, were found to have been *unsuccessfully* vaccinated, and their parents willingly admitted that it never " took." This unsuccessful vaccination is of course quite useless as a preventive against small-pox.

3. Successful vaccination, as defined above, cannot be depended upon to protect for more than 10 years. After that time, and indeed, towards the end of that period, the protective influence weakens, and finally dies out. Protection is, however, acquired again, to an equal extent as before, by re-vaccination, which must be successful to have an influence.

When Jenner discovered the protective power of vaccination, he concluded that this would continue for life, an observation which could only be established by waiting many years to see if in fact such were the case. It was found, after waiting many years, that vaccination had to be repeated to continue the protection against small-pox.

Much has been made by opponents of vaccination that a person, aged say 30 years, has contracted a severe attack of small-pox, No consideration however is given of the fact that his vaccination is some 20 years out of date.

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* With a total combined area equal to half a square inch.

The above remarks may be summarised as follows :—

(*a*) Vaccination must be properly performed.
(*b*) It must be successful.
(*c*) It must be repeated after a lapse of 10 years.

Such persons who comply with these requirements are protected against small-pox, a rule to which the exceptions are very few indeed, and so rare as to be negligible in practice. One exception to these rules which came to my notice occurred before I came to Dewsbury. The daughter of a medical man was vaccinated in infancy and re-vaccinated successfully one year before contracting a very mild attack of small-pox, from which she rapidly recovered. Her stay in hospital was not more than a fortnight, and I am informed by her father that she is not marked. The other exception is one which came under my own notice in 1905, but does not comply with the requirements mentioned above, namely, that the vaccination must be properly performed, *i.e.*, in three or four places to acquire a lasting protection. A child of four years with one small vaccination scar produced in infancy, contracted small-pox and died.

An important class of cases has been brought forward by anti-vaccinators as an argument against vaccination, in total disregard of elementary facts in pathology. It is common knowledge, or at any rate it ought to be among those who discuss any sort of epidemic disease, that after the infection of any infectious disease has been received into the system of any person, a time elapses, called the "incubation period," during which time the patient experiences no symptoms at all. Towards the end of that period symptoms, varying with the kind of disease with which he has been infected, supervene. This is the "onset" of the disease and it always precedes the rash (if it be a disease which produces a rash).

Now the "incubation period" of small-pox is 12 days, the "onset" or "period of invasion" lasts about two days, and on the fifteenth day from the date of infection the characteristic rash appears. Hence, if vaccination be performed *within* the 15 days before the appearance of the rash *it cannot be depended upon to prevent something which has already happened*, *i.e.*, the reception within the system of the infection of small-pox. To take an example from ordinary life one might as well expect to insure a house against fire as soon as it began to burn, and to regard premiums paid on fire insurance as money thrown away.

Hence, all cases which are vaccinated for the first time within 15 days before the appearance of their rash are strictly speaking, members of the " unvaccinated " class. To count them otherwise would enable one to eliminate entirely the unvaccinated class by vaccinating people as soon as they began to suffer from the headache and backache, the usual commencing symptoms of small-pox. A large number of persons were actually vaccinated within the incubative period, many of them being contacts who were vaccinated a few days before the " onset " of the disease, but infected some days previously.

As a matter of fact vaccination performed early in the incubation period does, in some cases, appear to arrest the development of the disease, and in others to modify the severity of the disease, but in spite of this, it is improper to count in the vaccinated class those who have not been vaccinated until the infection has been received into the system. Small-pox is, in the majority of cases, a disease which shows an extraordinary regularity, and indeed punctuality, in its phases. The rash practically always appears on the same day of the week (a fortnight later) as infection was received, so that it is, in most cases, an easy matter to decide when the case became infected. We cannot say the same in the case of most of the other acute infectious diseases.

For statistical purposes therefore a person can only be placed in the vaccinated class if he has been successfully vaccinated before infection has been received, and it is necessary to ascertain his vaccination condition upon the date he received his infection, *i.e.*, 15 days before the appearance of the rash.

This point has been dealt with at some length because it is one upon which a good deal of misapprehension obtains, and one which has served as a basis for a considerable amount of misrepresentation.

The next point upon which something should be said is that it has been claimed that "the more vaccination there is, the more small-pox occurs."* This is a confusion of cause and effect. It is true that increase of vaccination and small-pox go side by side until the relative increase in vaccination outstrips the relative amount of small-pox. As small-pox in a district increases, the Sanitary Authority urges vaccination (a duty which also lies upon the Guardians), people become apprehensive of contracting small-pox and accept vaccination. When the epidemic declines people cease to see the necessity for vaccination, and the rush to the Public Vaccinator and private practitioners lessens.

Excess in number of vaccinations during a small-pox epidemic therefore is the effect and not the cause of an excess in number of cases of small-pox.

It is difficult to see how it can be otherwise, for when we consider who it is that contracts small-pox during an epidemic, one class of persons stands out prominently as immune to small-pox, and that class is the recently vaccinated (or re-vaccinated). But "recently vaccinated" does not include those vaccinated within 15 days of the appearance of the rash of smallpox, for reasons stated above. The only reason for vaccination increasing small-pox could be that (1) vaccinated people were more susceptible to small-pox, and, therefore, more likely to contract it ; or (2) vaccination is infectious, and can produce small-pox in others.

(1) That the first is untrue is abundantly proved by considering the admissions to the Small-pox Hospital. No person, vaccinated *successfully* in 1904 *previous* to infection by small-pox contracted the disease in that year. The case of a girl re-vaccinated in the previous year has already been mentioned, and is the only case which has come to my knowledge as evidence against the first of

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* This statement was again made as recently as April 14th, 1905, at a meeting of the Dewsbury Board of Guardians. The form in which it was reported to have been made was "The more vaccination you have, the more small-pox you get." But Germany, which completely refutes this assertion, is without doubt the most efficiently vaccinated country in the world. There are no grounds for supposing that Germany's sanitary state has anything to do with this immunity from small-pox epidemics.

the above propositions. Obviously this is an exception to the rule, and few rules are known which never have some exceptions to them. In spite of the enormous number of successful vaccinations and re-vaccinations performed in Dewsbury during 1904 none of these (except those vaccinated within 15 days after they had become infected) contracted small-pox.

The actual amount of vaccination performed in Dewsbury during 1904 is unknown, on account of the fact that re-vaccinations performed by private practitioners are not registered. There are grounds, too, for believing that private practitioners who performed primary vaccinations on others than infants did not, in all cases, certify the fact to the Vaccination Officer. Among other grounds for holding this view, I find that the Vaccination Officer received 2,854 certificates of successful primary vaccination during 1904, while the Public Vaccinator himself vaccinated 2,747 primary cases during the year. As other Medical men were also vaccinating in considerable amount, a number of certificates do not appear to have been transmitted.

The following table shows the amount of vaccination performed in Dewsbury by Dr. Charles Hall as Public Vaccinator during 1903 and 1904 :—

Year.	Quarter.	Number of Primary Vaccinations.	Number of Re-vaccinations.
1903	1st	165	92
,,	2nd	222	213
,,	3rd	104	38
,,	4th	65	4
1904	1st	55	2
,,	2nd	342	81
,,	3rd	1099	626
,,	4th	1251	1396
Total in 2 yrs	5755	3303	2452

Incidentally, it may be remarked that contrary to the unverified statements of certain people, vaccination appeared, in point of date, to bear a distinct relation to the cessation of the epidemic.

The above table shows that most vaccination was performed in the quarter during which the epidemic subsided, and the rise in number of vaccinations during previous quarters was because of the spread of the epidemic. As a case occurred in a locality vaccination was specially urged in that neighbourhood, often with great success. How this can be truly said to have resulted in the spread of small-pox is, it must be admitted, something of a marvel, but still it has been stated. It has never been shown—as of course it must, if vaccination is to be discredited—that any of the large number of persons tabulated above contracted small-pox (with possibly one exception) except those who were already developing small-pox in their system at the date of vaccination. I have tried to estimate the amount of recent vaccination performed by private practitioners in Dewsbury, but with not much success, as sufficient information is not available. Possibly figures should be added to the 5,755 already mentioned to bring them up to 8,000. In addition persons vaccinated since 1894 should also be added in, since they, too, are protected, having been vaccinated within the last 10 years, and also those who have already had small-pox. A very considerable proportion of the inhabitants of Dewsbury are, therefore, now protected against small-pox.

(2) As to the second proposition that vaccination produces small-pox, *i.e.*, that it is infectious, this is amply disproved by the fact that vaccination in places where small-pox is not present, does not produce that disease. In some districts, as in parts of Wales, 80 to 90 per cent. of the children born are vaccinated without any ill result following.

Throughout this Report numerous references have been made to the protective power of vaccination, and it is not necessary to repeat them here. In particular, Table IV. (page 18) should be again referred to; it shows the vaccination status of 34 families in which every unvaccinated person developed small-pox, and every person vaccinated within the previous 10 years escaped, excluding those persons who had previously had small-pox. In this group of families everyone was either "protected" by recent vaccination or previous small-pox, or developed small-pox.

No useful purpose is served by giving odd instances, as some do, of families where a vaccinated person (not a recently vaccinated person) has contracted small-pox and other unvaccinated members of the family have escaped,because it has, first of all, to be investigated whether the unvaccinated persons who escaped, were ever brought into contact of any intimacy with the infection of small-pox. It is quite likely that a person in whom the effect of vaccination is working off may be in contact with small-pox and contract the disease, while unvaccinated members may escape, because these latter may never have been exposed to infection to the same extent, and if the case which results is at once detected and removed, no spread of the disease may occur. It must further be stated that a very large number of unvaccinated persons were at once vaccinated on the occurrence of a case of small-pox in their family. This is relied upon to have a great influence in limiting the attack of small-pox in that family to the person first infected. I have found no reason to doubt that this, in fact, does so limit the incidence of the disease, and it is a measure upon which I place great reliance, provided that vaccination can be performed promptly on the occurence of the case.

When the hospital statistics in Part IV. have been consulted, no person who is not so biassed as to make it a waste of time to attempt to convince him, can hesitate as to the conclusion that—

(1) Vaccination, if recent, prevents small-pox.

(2) Even when the preventive influence of vaccination has weakened, its power of saving life remains for a considerable time.

(3) A time comes when vaccination has so worn out in the system that it has no influence in preventing small-pox, nor in saving the lives of those attacked.

A few words as to *compulsory* vaccination.

A parent has the opportunity of going before the magistrates and if he satisfies them that he has a conscientious objection to vaccination, *i.e.*, that it would be prejudicial to his child's health, he is entitled to an exemption certificate provided that (*a*) he appears before the magistrates before his child is four months old ; and (*b*) that he transmits the exemption certificate to the Vaccination Officer within the next seven days. If he does not comply with these requirements the Law says that the child must, under a penalty, be vaccinated.

From the point of view of the opponents of vaccination, this should fairly be considered a very reasonable way of securing liberty of the conscience. Whether it is better that a minority should secure liberty of the conscience at the expense of the majority of the population of this Country, is, however, another question.

I suppose that liberty of the conscience means freedom to do that which one's conscience tells one to be right. Certain persons' conscience tells them that it is wrong to introduce animal products *i.e.*, calf lymph, into their children's blood, on account of the supposed harm which would or might follow. The fact is overlooked that calves do not suffer from the particular disease which anti-vaccinators make so much outcry against, and, therefore, this disease cannot possibly be introduced by vaccination by sterile instruments with calf lymph. To take another example, eczema, is not a disease confined solely to vaccinated babies, nor in fact is it confined to babies at all. Calves used for the production of lymph are slaughtered before the lymph is issued for use, and if the calf is found to be suffering from tuberculosis, the lymph is not used. In this way there is no possibility of tuberculosis being communicated by means of the lymph.

Anti-vaccinators maintain that the proper method of dealing with an epidemic of small-pox is by attention to sanitation, and by exercising modern methods of dealing with infectious disease, namely, hospital isolation and disinfection. But one may ask them should this be compulsory, and if so, where does the liberty of the conscience come in. I can quite imagine that a body of persons exists who would consider it wrong for, let us say, a mother to be separated from her children infected with small-pox, and the father and even other relatives might also refuse to be separated from them, and yet there might be no room in the hospital for those who were not patients. Small-pox Hospitals would have to be much larger, and, therefore, more expensive if this sort of thing were permitted. Such people again might hold that hospital treatment of small-pox might be prejudicial to their children's chance of recovery. What is to be done with such people ? No doubt their next door neighbours, anti-vaccinators or not, would vehemently denounce any Health Official who advised that their liberty of conscience should be respected, and further, these neighbours might hold that they also had consciences, and that they demanded the removal of the cases from their vicinity. Obviously everyone's conscience in such a state of affairs could not be respected, and some one must give way.

One, therefore, has to talk in a circle in considering this subject, and the only way out is to state that where the common weal is concerned, either private objections must give place to considerations of public safety or a public which tolerates private conscientious objections on any matter among a minority, must be prepared to accept the consequences of allowing that minority to act in a way which the majority regard as dangerous to the community. It is worth considering why it should be that persons who have protected themselves and their families against small-pox should have to pay their share of the several thousand pounds expended in Dewsbury upon small-pox preventive measures in 1904. If "passive resistance" were a constitutional remedy, a good case would seem to be made out for the opponents of anti-vaccination for they have, I think, a legitimate grievance. The names of thousands of persons vaccinated and re-vaccinated during that year by the Public Vaccinator are all recorded in registers and preserved by the Clerk to the Dewsbury Board of Guardians. It is a somewhat curious coincidence that none of these persons (except those already infected at the date of vaccination) have contracted small-pox. May it not be that they all escaped because they were recently vaccinated ?

VACCINATION IN FORMER YEARS IN THE BOROUGH OF DEWSBURY.

Vaccination has been much neglected, or it may be better expressed as ignored, in Dewsbury for many years. The figures for the Borough between the years 1872 and 1891 are not available, but for the whole Union the Returns of the Vaccination Officer are as follows :—

TABLE XXIII. — *Showing Vaccination Statistics for the whole Dewsbury Union for the Years* 1872 to 1892.

Year.	Births registered in each year.	OF THE CHILDREN WHOSE BIRTHS WERE REGISTERED DURING THE YEAR, THERE WERE 13 MONTHS LATER THE FOLLOWING :—						
		Successfully Vaccinated.	Certified as insusceptible to Vaccination.	Had Small-pox.	Died Unvaccinated.	Vaccination postponed by Medical Certificate.	Remaining Unaccounted for.	Percentage not accounted for (including cases postponed) Cols. 6 & 7.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.	Col. 6.	Col. 7.	Col. 8.
1872	5279	4256	1	3	643	376		7.1
1873	5358	2886	9	2	726	3	1732	32.4
1874	5510	2713	1	6	844	9	1937	35.3
1875	5323	3456	1	..	648	45	1173	22.9
1876	5661	3031	2	1	756	42	1829	33.0
1877	5815	4048	3	..	733	86	945	17.7
1878	5914	4382	2	..	730	66	734	13.5
1879	5433	4177	3.	..	545	63	645	13.0
1880	5379	3754	9	..	713	82	821	16.8
1881	5248	3611	3	1	595	92	946	19.8
1882	5196	3910	5	1	624	77	579	12.6
1883	5237	3684	5	..	508	62	978	20.0
1884	4991	2497	4	..	613	24	1853	37.6
1885	4947	2093	3	..	515	29	2307	47.2
1886	4975	2427	5	..	678	88	1777	37.5
1887	4987	2812	6	..	695	53	1421	29.6
1888	4843	2644	4	..	634	53	1508	32.2
1889	4660	2281	3	..	637	69	1670	37.3
1890	4619	2090	5	..	718	66	1740	39.1
1891	4601	2347	11	3	743	61	1436	32.5
1892	4616	2139	9	1	727	73	1667	37.7

Thus a large percentage of children yearly escaped vaccination especially during the latter half of the above period, so that between 1884 and 1892 about one-third of the children born remained unvaccinated 13 months after the end of the year in which they were born. As time went on some of these children would die, leave the district, or perhaps be vaccinated, but speaking broadly, of the persons now living in the Dewsbury Union between the ages of 12 and 20 years about one-third would be unvaccinated at the beginning of the epidemic. For Dewsbury Borough, the proportion is probably higher.

The following table shows the figures for the Borough between the years 1892 and 1904 :—

TABLE XXIV.—*Showing the Numbers of Children Vaccinated and Unvaccinated* 13 *months after the end of each year among all Children born in the Borough of Dewsbury between the years* 1892 *and* 1904.

Year.	Births registered in each year.	Of these there were 13 months later :—				Percentage Unvaccinated, Untraced, or Exemption Certificate at December 5th, 1904. (Col. 3 corrected). (*See Col. 4 of table below.*)
		Vaccinated.	Died. (Under 1 year.)	Un-vaccinated, Untraced, or Exemption Certificate.	Percentage Un-vaccinated. Untraced, or Exemption Certificate. (Col. 3.)	
		Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5
1892	837	161	162	514	61.4	?
1893	835	202	188	445	53.2	?
1894	758	131	145	482	63.5	42.3
1895	797	98	209	490	60.3	42.5
1896	762	80	179	503	66.0	44.7
1897	812	69	180	563	69.3	45.3
1898	710	185	113	412	58.0	44.0
1899	660	166	133	361	54.6	40.4
1900	665	146	135	374	57.0	44.6
1901	689	195	125	369	53.5	40.9
1902	636	249	75	312	49.0	38.3
1903	661	398	107	156	23.6	..
1st half 1904	318	185†	27†	106†	33.3†	..
2nd half 1904	353	119*	31	..	..	..

Column 4 of the above table shows that a very considerable proportion of the total births remained unvaccinated. Column 5 of the above table shows the unvaccinated percentage remaining at December 5th, 1904, after a great many vaccinations had been performed among the children who had previously evaded vaccination. As will be seen there is a difference of some 20 per cent. in the figures in several instances, a very satisfactory result, but one still capable of great improvement.

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† From half-yearly returns.

* Informal return at January 31st, 1905, when most of children are under age of 6 months, and therefore not legally bound to be vaccinated ; 19 of those born have exemption certificates.

The 1904 figures are necessarily incomplete on account of the large number of children who had not yet reached the vaccination age.

The following table shows the work done in reducing the number of unvaccinated children :—

TABLE XXV.—*Showing Number of Children born in the Years* 1894 *to* 1903 *in the Borough of Dewsbury, who were vaccinated or Unvaccinated at December* 5*th*, 1904.

Year.	Births registered in each year.	OF THESE THERE WERE AT DECEMBER 5th, 1904 :—			
		Vaccinated.	Unvaccinated excluding those who died under 1 year of age.	Percentage Vaccinated.	Percentage Unvaccinated. (excluding deaths under 1 year of age.)
		Col. 1.	Col. 2.	Col. 3.	Col. 4.
1894	758	292	321	38.5	42.3
1895	797	245	339	30.7	42.5
1896	762	242	341	31.7	44.7
1897	812	264	368	32.5	45.3
1898	710	284	313	40.0	44.0
1899	660	260	267	39.3	40.4
1900	665	233	297	35.0	44.6
1901	689	282	282	40.9	40.9
1902	636	317	244	49.8	38.3
1903	661	395	159	59.7	24.0

The "Unvaccinated" Column includes those who were exempted, left the district, were insusceptible, postponed, or otherwise unaccounted for. I believe that a number have been vaccinated but never certified as such. Some also will have died since the Vaccination Officer's Returns were made up 13 months after the end of each year. There are no means readily available for estimating the number of such deaths.

The figures in Column 1 are the actual number of vaccinations registered. Column 4 is a percentage based upon the supposed number of unvaccinated children and the number of registered births. As many children die in the first year of life, the percentage given does not accurately represent the proportion of unvaccinated children living. The numbers at school age have been accurately investigated, and are given on page 56.

It is very evident there are still a large number of unvaccinated children in Dewsbury. They are a danger to the town, and their parents are living in a fool's paradise. They will supply the material for another epidemic of small-pox, which is bound to come sooner or later, and when it does come much life may be lost and suffering and disfigurement occasioned before the disease may be subjugated. It is not very difficult to prophesy in instances where neglect of public health principles has occurred. These principles cannot be ignored without a disaster following. One cannot say exactly when the disaster will occur, but, with certainty, one can say that it will occur in its own time. Insanitary houses and conditions foster typhus fever, impure water may result in epidemics of typhoid fever, and an unvaccinated population favours the establishment of small-pox epidemics. So convinced of this latter fact are most of the nations of Europe* that they have made vaccination compulsory. England has to pay an extremely heavy price for permitting private individuals to be their own public health experts in this matter.

INQUIRY INTO THE VACCINATION CONDITION OF INMATES OF INFECTED HOUSES.

As far as has been possible, every infected house has been visited, and inquiry made into the condition of its inmates, as far as vaccination was concerned, at the date of development of small-pox in that house.

It appeared that if it could be ascertained how many persons fell into the following classes, namely :—

(1) Vaccinated within the last 10 years } excluding
(2) Vaccinated more than 10 years ago } re-vaccinations.
(3) Re-vaccinated.
(4) Never vaccinated.
(5) Previously had small-pox.

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* Even Turkey !

then it would be interesting to note the proportion of each class who developed small-pox.

A believer in vaccination would hold that classes (1), (3) and (5) should furnish no cases, or if such did occur they should be very few in number, and in the first class, the age at the development of small-pox if the individual were efficiently vaccinated should be some eight or nine years from the date of vaccination. Instances of small-pox in classes (3) and (5) might be expected to be very rare indeed.

Class (2) should show results considerably more favourable than class (4), but not the striking differences shown by classes (1), (3) and (5).

It happened that some families could not be traced, in one instance information was refused, and in two or three cases information was not received for other reasons. I know of nothing in the cases not dealt with either for or against the view that vaccination had or had not protected them, with the exception of a family, now removed out of the Borough and untraced, where an adult contracted small-pox, as also her son, aged 7 years, vaccinated in infancy. He had a very mild attack. This case should be remembered in considering the two cases below of children vaccinated within the last 10 years who developed small-pox. The results obtained are tabulated as follows :—

TABLE XXVI.—*Showing Vaccination condition of inmates of houses in which more than one case of Small-pox occurred.*

Number of Houses.	Number of Inmates.	Number contracting small-pox during present epidemic.	Vaccinated before exposure to Infection.				Revaccinated before exposure to Infection.		Not Vaccinated before exposure to Infection.		Previously had Small-pox.	
			Within the last 10 years.		More than 10 years ago.							
			Number of Persons.	Number contracting small-pox during present epidemic.	Number of Persons.	Number contracting small-pox during present epidemic.	Number of Persons.	Number contracting small-pox during present epidemic.	Number of Persons.	Number contracting small-pox during present epidemic.	Number of Persons.	Number contracting small-pox during present epidemic.
99	577	275	51	2	248*	117	14	1	240†	154	24	1

* Of whom 86 got revaccinated on the occurrence of the first case in the house.

† Of whom 107 got vaccinated on the occurrence of the first case in the house. In some cases vaccination was performed too late in the incubative period, and small-pox developed.

From this table, dealing with families in which more than one case of small-pox occurred, we find the following :—

Of the 51 persons vaccinated within the previous 10 years 2 developed small-pox, *i.e.*, 3.9 per cent. (1 in 25) ;

Of the 248 persons vaccinated more than 10 years previously, 117 developed small-pox, *i.e.*, 47.1 per cent. (a little less than 1 in 2) ;

Of the 14 persons who had been re-vaccinated, one developed small-pox, having been re-vaccinated more than 20 years ago ;

Of the 24 persons who had had small-pox in previous epidemics, one again contracted the disease ;

Of the 240 persons unvaccinated, 154, or 64.1 per cent. developed small-pox (nearly 2 in 3).

These figures suggest the conclusion, though they are, by themselves, too small in number to dogmatise upon, that the order of probability of contracting small-pox is

(1) The unvaccinated.
(2) Those vaccinated more than 10 years previously.
(3) Those vaccinated within the last 10 years.
(4) Those re-vaccinated or those who have previously had small-pox seem to be the least susceptible.

These figures may also be presented in the following manner :—

Table XXVII.—*Showing Percentages of Vaccinated and Unvaccinated Contacts in houses where more than one case of small-pox occurred, and Percentage of Attacks furnished by each class.*

	Vaccinated Contacts.		Re-vaccinated Contacts.	Unvaccinated Contacts.	Contacts Previously had Small-pox.
	Within 10 years.	Over 10 years ago.			
Percentage exposed to infection. Percentage of total attacks furnished by each class.	8.8 furnishing 0.7 of the attacks	42.9 furnishing 42.5 of the attacks	2.4 furnishing 0.1 of the attacks.	41.5 furnishing 56.0 of the attacks	4.1 furnishing 0.4 of the attacks.

Since the 240 people who were unvaccinated comprise persons of all ages exposed to infection like persons in the other classes, it is permissible to calculate what proportion of contacts should have contracted small-pox in the other classes if they too had been unvaccinated. The unvaccinated class is the only one in which Nature has not been interfered with, the state of persons in the others being complicated with more or less recent vaccination or by previous attacks of small-pox.

Since among 240 unvaccinated people 154 contracted small-pox, then among 51 persons (recently vaccinated) 32 should have contracted small-pox. But actually only two developed small-pox.

In the same way the 248 persons who had been vaccinated more than 10 years ago should have furnished 154 cases, but actually only 117 resulted.

The re-vaccinated class, numbering 14, should have supplied 9 cases, instead of 1. Those who had already had small-pox may be left out of the discussion. So if the incidence of small-pox had been equally distributed, *i.e.*, had it occurred as severely among other classes as it did among the unvaccinated, then instead of 120 cases among these other classes, 195 should have resulted. In some way therefore, 75 other cases which might have been expected in these families. did, for some reason, not occur.

It will probably be asked, why is it, if vaccination is a preventive against small-pox that 120 vaccinated cases occurred in the above families. The answer is that vaccination performed more than 10 years before exposure to infection cannot be relied upon to prevent attack. But there are two cases cited above which occurred in persons vaccinated within the past 10 years. One was a child aged nine years, and, therefore, on the verge of passing out of her protected condition. The other was a child aged four years, who had only had one small vaccination mark made upon him in infancy. This has already been said to be perfectly useless as a protective for more than an extremely short period, and I am perfectly willing to agree that " one mark " vaccination is not, practically speaking, a preventive against small-pox.

Persons in whom the operation was performed *unsuccessfully* or after they were already infected, are, of course, counted as unvaccinated, for reasons already given. The above cases deal, exclusively, with 99 families, in which more than one case of small-pox occurred. They have been investigated separately as in this way it is easy to obtain particulars of a large number of cases (*i.e.*, 275) and their contacts, by making a limited number of enquiries.

The houses in which only one case of small-pox occurred have also been visited with a view of obtaining information upon similar lines to that given above. The cases which occurred in public institutions and Common Lodging Houses are omitted, as accurate details of the contacts are not available. Owing to removals and other causes, one or two cases in private houses are also omitted. Nothing is known regarding such cases omitted as favouring vaccination or otherwise.

TABLE XXVIII.—*Showing vaccination condition of inmates of houses in which only one case of small-pox occurred.*

Number of Houses.	Number of Inmates.	Number contracted small-pox during present epidemic.	VACCINATED BEFORE EXPOSURE TO INFECTION.			
			Within the last 10 years.		More than 10 years ago.	
			Number of Persons.	Number contracting small-pox during present epidemic.	Number of Persons.	Number contracting small-pox during present epidemic.
266	1339	266	143	Nil.	653 *	130

REVACCINATED BEFORE EXPOSURE TO INFECTION.		NOT VACCINATED BEFORE EXPOSURE TO INFECTION.		PREVIOUSLY HAD SMALL-POX.	
Number of Persons.	Number contracting small-pox during present epidemic.	Number of Persons.	Number contracting small-pox during present epidemic.	Number of Persons.	Number contracting small-pox during present epidemic.
58	2 †	433 ‡	134	52	Nil.

* Of whom 369 were forthwith vaccinated on the discovery of the case.

† 1 successfully revaccinated 1 year before attack. Patient now (1905) has no pock-marks on face. 1 successfully revaccinated 20 years ago.

‡ Of whom 251 were forthwith vaccinated on the discovery of the case. This only left 48 unvaccinated contacts.

There is nothing calling for any special mention in the above table, beyond the cases in the footnotes, further than what has already been described in Tables XXVI. and XXVII. Table XXIX. gives the percentages of each class of contact exposed to infection, together with the percentages of the whole attacks furnished by each class.

Table XXIX.—*Showing percentages of vaccinated and unvaccinated contacts in houses where only one case occurred, and the percentage of attacks furnished by each class.*

	Vaccinated Contacts.		Re-vaccinated Contacts.	Unvaccinated Contacts.	Contacts previously had Small-Pox.
	Within 10 years.	Over 10 years ago.			
Percentage exposed to infection. Percentage of total attacks furnished by each class.	10.6 furnishing 0.0 of the attacks	48.6 furnishing 48.8 of the attacks	4.3 furnishing 0.7 of the attacks	32.3 furnishing 50.3 of the attacks	3.8 furnishing 0.0 of the attacks

Tables XXVII. and XXIX. show the obvious advantages experienced by those vaccinated within 10 years, those re-vaccinated and those who have already had small-pox. Contrasting those vaccinated more than 10 years ago with the unvaccinated, the former class outnumber the latter, and contains a smaller number of small-pox attacks. Adding together those vaccinated over 10 years ago in Tables XXVI. and XXVII. and also those unvaccinated, we find that 901 contacts vaccinated over 10 years ago supplied 247 cases of small-pox, and 673 contacts unvaccinated supplied 288 cases of small-pox.

I have dealt at some length with these particulars, and have indeed repeated myself several times, in order to attempt to counteract the misapprehension and misrepresentation to which these statements will be subjected. I have been many times asked, after a person aged, say 35 years, has been taken to hospital with small-pox, whether he was vaccinated or not, the questioner well knowing the case was vaccinated in infancy. On an affirmative answer being given, it has several times served as a peg on which the questioner has hung a denunciation of vaccination.

If these people could only realise that such events are as equally triumphs from the point of view of those who uphold vaccination as they are from that of its opponents, much fruitless argument would be avoided. To put the matter in a nutshell, all that need be discussed is have you or have you not been vaccinated within the past 10 years ? If not, you are not protected against small-pox.

Any argument as to whether those vaccinated only in infancy have milder attacks* in the event of their contracting small-pox after their protection has worn out has really nothing to do with the question, namely, does vaccination prevent small-pox ? This is the important point, and is abundantly proved—within the limitations laid down as to it being successful, sufficient in extent, and recent—in the above pages.

In concluding this portion of the Report I have the pleasant duty of recording my thanks to all who have assisted in its production, not only to the Officials of the Dewsbury Corporation, but also to those of other Authorities and to the medical men in practice in the district.

I have pleasure in recording here the high sense of duty displayed by everyone who worked under my direction in the Sanitary Department, and particular mention should be made of the services of Mr. James Thackray, the Chief Sanitary Inspector ; the value of the work they performed would with difficulty be over-estimated, and recognition is due to them of the part they played in subduing the epidemic.

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* Facts bearing on this point appear among the hospital statistics, *e.g.*, the death-rates of the various classes of vaccinated and unvaccinated, and percentages of each class who develop discrete, semiconfluent, and confluent attacks.

PART IV.

REPORT UPON THE SMALL-POX HOSPITAL,

BY

DR. E. M. ASHCROFT, *Resident Medical Officer.*

The last section of this report, containing the history of the epidemic from the point of view of hospital isolation and treatment, deals with all cases removed to hospital, and includes a number admitted from outside districts.

All cases occurring in Dewsbury were admitted to the Ravenswharf Hospital, with the exception of the last two, which were removed to Mitchell Laithes Hospital.

Before dealing with the cases I think a description of the hospital itself would be of interest.

HOSPITAL BUILDINGS.—The following particulars refer to the Ravenswharf Hospital as I found it on taking up my duties as Resident Medical Officer in the middle of October, 1904 :—

The buildings may be divided into two portions—the old and the new.

The old portion had many times been used in the past for the isolation of cases of small-pox, and apparently had met the requirements of the district.

This portion of the hospital consisted of five large wards and one small one, all connected with one another by covered passages. The buildings consisted of wood, covered externally with corrugated iron.

The internal dimensions of the various wards were as follows :—

WARD I.—47 ft. 2 ins. × 19 ft. }
,, II.—35 ft. 3 ins. × 21 ft. } 13 ft. of height allowed.*
,, III.—16 ft. × 13 ft. 8 ins. × 9 ft. 7 ins. (Small Ward.)
,, IV.—45 ft. 2 ins. × 19 ft. 2 ins. }
,, V.—35 ft. 5 ins. × 19 ft. 3 ins. } 13 ft. of height allowed.
,, VI.—35 ft. 5 ins. × 19 ft. 3 ins. }

Wards V. and VI. had each a small ante-room 19 ft. 3 in. × 11 ft. 4 ins. leading into the main ward.

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*In calculating the cubic capacity of a ward, it is not permissible to allow more than 13 feet of height, even if the actual height exceeds this amount.

The Local Government Board's standard in Infectious Diseases Hospitals gives 2,000 cubic feet of air space and 144 square feet of floor area for each patient.

Taking each ward separately and allowing the full amount of air space for each patient, the results are as follows :—

WARD I.—11,691 cubic feet = 6 persons.
,, II.— 9,623 ,, = 5 ,,
,, III.— 2,095 ,, = 1 ,,
,, IV.—11,254 ,, = 6 ,,
,, V.— 8,181 ,, = 4 ,,
,, VI.— 8,181 ,, = 4 ,,

Thus it will be seen that the maximum number of patients in all the wards would be 26, if every one were given their full air space. The ante-rooms to V. and VI. were only used as day rooms for convalescents. The wards were all faultily constructed in that they were much too narrow, and it would have been impossible to give the necessary floor space for each bed.

This was the whole accommodation for patients until two new blocks were ordered early in September. On September 1st there were 89 patients under treatment, so that the resources of the several wards were more than fully taxed. Of course in epidemic times the full amount of air space per patient has often to be considerably reduced ; but this, though sometimes inevitable, is to be deprecated. The lighting and ventilation of the wards were fairly good.

LAVATORY AND BATHING ACCOMMODATION.—Wards I., IV., V. and VI. were each provided with one w.c. There were also two other w.c.'s in the main portion. The w.c. accommodation was, therefore, fairly adequate.

The bathing accommodation was quite inadequate. There were only two fixed baths in the whole of the old hospital, and these two were in the centre of the main building. Patients to be bathed had to travel too far along draughty passages to reach these bathrooms, and the rooms themselves were much too small for the purpose. Portable Ward Baths were used on some occasions, but owing to the extreme narrowness of the wards and the distance from the nearest hot water tap, their frequent use was a matter of much difficulty.

LIGHTING AND HEATING.—The wards were all lighted by gas and heated by slow combustion stoves placed in the centre of the already too narrow wards.

NURSES' DUTY ROOMS.—The arrangements for the storage of dressings, &c., consisted of one small room in the centre of the main block. This room was 16 ft. by 14 ft. approximately, and within its narrow limits all the dressings, drugs, and surgical requirements, &c., had to be kept. The absence of any kind of slop sink was somewhat severely felt. In the hospital itself, apart from the administrative block, there was no provision for the preparation of food for the patients.

ADMINISTRATIVE BUILDINGS.—Hospital administration was made somewhat difficult by the lack of accommodation for the housing of staff, and for want of storage room. The administrative block consisted of an old stone cottage, containing a kitchen and scullery and sitting room (used as a bedroom during a portion of the epidemic). The bedroom accommodation consisted of four small rooms, only large enough for one bed in each.

THE LAUNDRY was placed in close proximity to the wards and to the administrative block, and was much too small to cope with the amount of washing necessary in a hospital with so many patients under treatment. There were no labour-saving appliances whatever, and the place was dark and very small. All the washed articles had either to be dried in the open air or before an open fire until the middle of December, when a drying closet was erected. This closet, however, proved a total failure, and did not in any way help to relieve the pressure placed upon the laundry.

THE DISINFECTOR adjoined the Laundry, and here the infected bedding, etc., from the town was disinfected.

MEDICAL OFFICER'S QUARTERS consisted of a sitting room, bedroom and bathroom, and were situated in a small corrugated iron building near the cottage forming the Administrative Block.

It will be seen that the accommodation for the male and female staff was deficient in amount, and thus constituted an obstacle to the engagement of more staff pending the provision of quarters for them.

New Buildings.—To meet these difficulties two new Humphrey's Ward Blocks were ordered early in September, and were designed to hold 16 patients in each. On September 25th, however, one of these, practically completed, was burned down before ever having been used. The other building was hurried on and completed, and the re-building of the other structure was at once commenced, but was not finished until the middle of November. The internal measurements of each ward of these new ward blocks were 40 ft. by 20 ft. by 13 ft. (height allowed). Each block was provided with w.c. and bathroom.

These two ward blocks, the Discharging block and the Medical Officer's quarters have all now been removed to the Mitchell Laithes Small-pox Hospital of the Dewsbury Joint Hospital Board.

In the middle of October a canvas marquee was erected for the accommodation of the nurses and proved a great boon until it came to an untimely end in Christmas week, being blown down during a heavy gale.

Moor House Convalescent Home.—During the first week in September the Moor House was used for the accommodation of convalescent patients and proved of the greatest value. It came into use when the hospital had far exceeded what should have been the limit of its resources. It was a large private house about a mile from the hospital on the Heckmondwike Road, and was in a suitable position. The grounds were large enough to enable the patients to get out into the open air without going too near the main road. Inside the house there was accommodation for about 40 patients in addition to staff. The patients were transferred from the hospital to Moor House as soon as they were well enough to bear removal. Owing to lack of accommodation at the hospital the night nurses slept at Moor House, and were conveyed daily to and from the hospital.

DISCHARGING OF PATIENTS.—The arrangements for this very important part of hospital administration were open to considerable objection. When Moor House was acquired by the Corporation patients were discharged therefrom, and improvements in the plans for discharging were thus effected. It was not however, until November that a proper Discharge Block was erected at the hospital on the extreme limits of the hospital grounds. This Discharge Block consisted of a separate disrobing, bath, and robing room for each sex, and, in addition, a larger room with a stove in it to enable women to dry their hair before leaving. All these rooms were effectively shut off one from the other, and the whole structure was frequently sprayed with Formalin, and in this way disinfected.

STAFF.—It was not until the beginning of December that the staff became nearly sufficient for the needs of the hospital, but the lack of accommodation was a barrier to its further increase.

There were at this date engaged :—

Resident Medical Officer
Matron.
13 Nurses.
Caretaker and Wife (Cook).
4 Laundry Maids.
2 Kitchen Maids.
1 Ward Maid.
1 Staff Cook.

When the number of patients decreased and the nurses tent was demolished, one of the two new blocks was converted into nurses' quarters by being fitted with cubicles.

HOSPITAL GROUNDS.—The somewhat awkward position of the hospital precluded the possibility of completely fencing in the grounds, but tradesmen's carts, etc., which formerly drew up to the hospital doors were kept out after November 1st, and everything was done that was at all possible to prevent persons coming too near the wards.

ANALYSIS OF CASES ADMITTED TO HOSPITAL.

Before making an analysis of the cases treated, a detailed list is given, showing the register number of the case, initials of patient, sex, age, type of disease, state as to vaccination and remarks.

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
				1904.	1904.	1904.	1904.		1904.	1904.					
241	R. H.	M.	20 yrs.	Feb. 11	Feb. 10	Feb. 11	Feb. 11	Semi-confluent	Mar. 18	..	36	Infancy	3	..	..
242	A. H.	F.	9 ,,	21	..	19	21	Discrete	Mar. 18	..	26	Unvaccinated	..	..	Vacctd. Feb. 11, 1904
243	M. A. T.	F.	2½ ,,	26	Feb. 23	26	26	Discrete	Mar. 31	..	34	Unvaccinated	..	..	..
244	G. J.	F.	21 ,,	29	26	29	29	Discrete	Mar. 18	..	18	Infancy	3	..	..
245	W. H.	F.	14 ,,	Mar. 1	29	Mar. 1	Mar. 1	Discrete	Mar. 31	..	30	Doubtful	none	..	..
246	W G.	M.	28 ,,	3	27	Feb. 29	3	Confluent	..	Mar. 13	..	Unvaccinated	..	..	..
247	L. T.	F.	34 ,,	6	Mar. 5	Mar. 6	6	Discrete	Mar. 31	..	25	Unvaccinated	..	..	Vacctd. Feb. 29, 1904
248	H. T.	M.	16 ,,	27	23	26	27	Confluent	May 20	..	54	Unvaccinated	..	..	..
249	A. R.	M.	15 ,,	27	25	27	27	Confluent	May 20	..	54	Unvaccinated	..	..	..
250	K. W.	F.	16 ,,	29	25	27	29	Discrete	May 13	..	45	Unvaccinated	..	..	..
251	I. T.	M.	6 ,,	30	28	30	30	Semi-Confluent	June 3	..	65	Unvaccinated	..	..	..
252	W. G.	M.	48 ,,	31	..	..	31	Discrete	April 22	..	22	Infancy	3	..	..
253	S. G.	F.	22 ,,	31	..	..	31	Discrete	June 3	..	64	Infancy	3	..	..
254	J. G.	M.	14 ,,	31	..	..	31	Discrete	April 22	..	22	Unvaccinated	..	..	..
255	B. G.	M.	11 ,,	31	..	..	31	Discrete	April 22	..	22	Unvaccinated	..	..	..
256	P. G.	F.	9 ,,	31	..	..	31	Discrete	April 22	..	22	Unvaccinated	..	..	..
257	M. G.	F.	3 ,,	31	..	..	31	Discrete	May 27	..	57	Unvaccinated	..	..	..
258	A. J. R.	F.	11 ,,	31	Mar. 27	Mar. 30	31	Semi-Confluent	May 13	..	43	Unvaccinated	..	..	..
259	E. C.	F.	10 ,,	April 1	29	April 1	April 2	Discrete	June 10	..	69	Unvaccinated	..	..	..
260	T. G.	M.	16 ,,	3	April 2	3	3	Discrete	May 6	..	33	Unvaccinated	..	..	..
261	A. I. G.	F.	8 mos.	3	2	3	3	Discrete	June 3	..	61	Unvaccinated	..	..	..
262	T. H. G.	M.	5 yrs.	6	3	5	6	Discrete	May 13	..	37	Unvaccinated	..	..	..
263	E. G.	M.	2½ ,,	6	5	6	6	Semi-Confluent	May 27	..	51	Unvaccinated	..	..	..
264	A. G.	F.	6 ,,	6	5	6	6	Confluent	..	April 16	..	Unvaccinated	..	..	..
265	H. G.	F.	6 ,,	6	5	6	6	Semi-Confluent	May 27	..	51	Unvaccinated	..	..	..
266	D. G.	M.	11 ,,	6	3	6	6	Semi-Confluent	May 27	..	51	Unvaccinated	..	..	..
267	A. B.	F.	7 ,,	6	Mar. 31	5	6	Discrete	May 6	..	30	Unvaccinated	..	..	..
268	R. G.	F.	24 ,,	7	..	..	7	Discrete	April 22	..	15	Infancy	2	..	..
269	R. D.	F.	6 ,,	9	April 3	April 8	9	Discrete	May 6	..	27	Unvaccinated	..	..	..
270	I. T.	F.	6 ,,	10	6	8	11	Confluent	July 8	..	88	Unvaccinated	..	..	..
271	S. M.	F.	9 ,,	11	8	10	11	Semi-confluent	May 20	..	39	Unvaccinated	..	..	..
272	M. M.	F.	23 ,,	11	8	10	11	Confluent	Sept. 7	..	149	Unvaccinated	..	..	Abscesses.
273	A. W.	F.	15 ,,	12	9	12	12	Discrete	May 27	..	45	Unvaccinated	..	..	..
274	L. C.	M.	17 ,,	12	11	12	12	Discrete	May 6	..	24	Unvaccinated	..	..	Vacctd. April 2, 1904
275	S. A. N.	F.	27 ,,	12	8	12	12	Discrete	May 27	..	45	Unvaccinated	..	..	..
276	H. G.	M.	5 ,,	13	12	13	13	Confluent	July 15	..	93	Unvaccinated	..	..	Vacctd. April 9, 1904
277	M. B.	F.	16 ,,	15	..	15	15	Discrete modified	May 9	..	24	Infancy	3	1903*	*3 marks.
278	H. W.	M.	10 ,,	15	April 13	15	16	Discrete	May 20	..	34	Unvaccinated	..	..	..
279	M. J. T.	F.	13 ,,	15	10	14	16	Discrete	May 20	..	34	Unvaccinated	..	..	..
280	H. T.	F.	6 ,,	15	14	16	16	Discrete	May 6	..	20	Unvaccinated	..	..	..
281	G. W. T.	M.	13 ,,	16	14	16	17	Discrete	May 20	..	33	Unvaccinated	..	..	..
282	J. H.	M.	28 ,,	17	..	16	17	Discrete	May 13	..	26	Infancy	1	..	..
283	L. W.	F.	4 ,,	17	..	16	17	Confluent	June 24	..	68	Unvaccinated	..	..	..
284	M. C.	F.	43 ,,	18	April 16	18	18	Discrete	May 20	..	32	Infancy	1	..	..
285	A. D.	F.	11 ,,	20	18	20	20	Discrete	May 13	..	23	Unvaccinated	..	..	..
286	E. T.	F.	2 ,,	20	18	20	20	Discrete	June 24	..	65	Unvaccinated	..	..	Vacctd. April 16.
287	G. H. B.	M.	4 ,,	20	16	18	20	Discrete	May 20	..	30	Unvaccinated	..	..	..
288	H. B.	M.	11 ,,	20	17	19	20	Discrete	June 17	..	58	Unvaccinated	..	..	..
289	E. A.	F.	38 ,,	21	18	21	21	Discrete	May 20	..	29	Infancy	2	..	..

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
				1904.	1904.	1904.	1904.		1904.	1904.					
290	B. M.	M.	30 yrs.	April 22	April 21	April 22	April 22	Discrete	May 6	..	14	Infancy	1	..	..
291	C. M.	F.	31 ,,	22	21	22	22	Discrete	May 6	..	14	Infancy	4	..	..
292	V. M.	F.	5 ,,	22	21	22	22	Discrete	June 10	..	49	Unvaccinated	..	..	..
293	M. A. T.	F.	40 ,,	24	..	..	24	Severe Discrete	June 17	..	54	Infancy	2	..	..
294	R. H.	F.	12 ,,	24	April 20	..	24	Discrete	June 17	..	54	Unvaccinated	..	..	..
295	E. H.	M.	9 ,,	24	20	..	24	Discrete	June 17	..	54	Unvaccinated	..	..	..
296	G. H.	F.	5 ,,	24	20	..	24	Discrete	May 27	..	33	Unvaccinated	..	..	..
297	M. H.	F	3 ,,	April 24	April 20	..	April 24	Discrete	May 27	..	33	Unvaccinated	..	..	..
298	A. M.	F.	8 ,,	24	22	April 24	25	Discrete	June 10	..	46	Unvaccinated	..	..	Abscess on scalp
299	F. D.	M.	8 ,,	25	23	25	25	Discrete	July 1	..	67	Unvaccinated	..	..	Vacctd. April 19th.
300	W. F.	M.	41 ,,	26	21	23	26	Discrete	May 13	..	17	Infancy	1	..	..
301	M. T.	M.	22 ,,	26	25	26	26	Discrete	May 6	..	10	Infancy	2	..	Revacctd. April 24th.
302	B. T.	F.	11 ,,	26	25	26	26	Semi-Confluent	June 17	..	52	Unvaccinated	..	..	..
303	B. M.	M.	10 ,,	26	22	25	26	Discrete	May 20	..	24	Unvaccinated	..	..	..
304	G. L.	F.	11 ,,	26	24	25	26	Discrete	May 27	..	31	Unvaccinated	..	..	..
305	P. R.	M.	12 ,,	26	24	26	26	Discrete	June 17	..	52	Unvaccinated	..	..	..
306	H. C.	M.	15 ,,	27	24	27	27	Discrete	June 10	..	44	Unvaccinated	..	..	..
307	N. L.	M.	7 ,,	26	25	26	27	Discrete	May 13	..	16	Unvaccinated	..	..	..
308	S. N.	M.	40 ,,	27	25	27	28	Semi-Confluent	June 17	..	50	Unvaccinated	..	..	..
309	F. A.	M.	4 ,,	29	25	28	29	Discrete	June 24	..	56	Unvaccinated	..	..	..
310	E. W.	F.	33 ,,	29	26	28	29	Discrete	May 20	..	21	Infancy	2	..	..
311	C. W.	F.	10 ,,	29	26	28	29	Discrete	May 27	..	28	Unvaccinated	..	..	..
312	J. W.	M.	6 ,,	29	27	29	29	Discrete	June 24	..	56	Unvaccinated	..	..	..
313	G. W.	M.	4 ,,	29	27	29	29	Discrete	May 20	..	21	Unvaccinated	..	..	..
314	S. W.	F.	2 ,,	29	27	29	29	Discrete	May 20	..	21	Unvaccinated	..	..	..
315	W. J.	M.	19 ,,	30	26	29	30	Confluent	July 1	..	62	Unvaccinated	..	..	..
316	H. R.	M.	7 ,,	May 1	29	30	May 1	Discrete	June 10	..	40	Unvaccinated	..	..	..
317	Z. C.	F.	8 ,,	2	29	May 1	2	Discrete	June 3	..	32	Unvaccinated	..	..	..
318	L. S.	M.	26 ,,	2	30	1	2	Discrete	May 20	..	18	Infancy	5	..	..
319	A. B.	M.	11 ,,	2	30	2	2	Confluent	June 24	..	53	Unvaccinated	..	..	..
320	C. A.	F.	29 ,,	2	30	2	3	Discrete	May 27	..	24	Infancy	4	..	Revacctd. April 30th.
321	M. C.	F.	15 ,,	3	..	..	3	Discrete	May 20	..	17	Unvaccinated	..	..	Vaccinated April 19th
322	J. C.	M.	19 ,,	5	April 30	May 2	5	Discrete	June 1	..	27	Unvaccinated	..	..	..
323	B. H.	M.	10 ,,	5	May 3	5	5	Semi-Confluent	June 10	..	36	Unvaccinated	..	..	..
324	L. B.	F.	13 ,,	5	2	5	5	Discrete	May 27	..	22	Infancy	1	..	..
325	M. B.	F.	20 ,,	6	3	5	6	Confluent	July 1	..	56	Unvaccinated	..	..	..
326	F. H.	M.	45 ,,	9	7	9	9	Discrete	May 27	..	18	Infancy	2	..	..
327	C. B.	M.	17 ,,	9	6	8	9	Semi-Confluent	June 17	..	39	Unvaccinated	..	..	..
328	J. S.	M.	24 ,,	10	7	9	10	Discrete	May 27	..	17	Infancy	2	..	..
329	P. G.	M.	4 ,,	10	9	10	10	Discrete	June 3	..	24	Unvaccinated	..	..	..
330	J. R.	M.	49 ,,	10	7	10	10	Discrete	July 8	..	59	Infancy	2	..	..
331	R. H.	M.	34 ,,	10	4	8	10	Discrete Mod.	May 27	..	17	Infancy	3	..	..
332	A. E.	M.	15 ,,	10	7	9	10	Discrete Mod.	May 27	..	17	Infancy	2	..	..
333	C. H. B.	M.	34 ,,	10	..	10	11	Discrete	May 27	..	16	Infancy	2	..	..
334	F. S.	F.	37 ,,	14	May 8	12	14	Discrete	June 3	..	20	Infancy	4	..	..
335	J. H. L.	M.	19 ,,	15	11	15	15	Discrete	June 17	..	33	Infancy	2	..	..
336	F. F.	F.	7 ,,	16	15	16	16	Discrete	June 24	..	39	Unvaccinated	..	..	..
337	A. C.	F.	10 ,,	16	14	16	16	Discrete	June 17	..	32	Unvaccinated	..	..	..
338	H. H.	M.	17 ,,	17	..	15	17	Semi-Confluent	July 15	..	59	Doubtful	..	..	..

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
				1904.	1904.	1904.	1904.		1904.	1904.					
339	M. F. ..	M.	34 yrs.	May 19	May 16	May 18	May 19	Discrete ..	June 3	..	15	Infancy ..	2	..	..
340	H. C. ..	F.	55 ,,	19	..	..	19	Discrete ..	June 30	..	42	Infancy ..	2	..	..
341	G. T. ..	M.	45 ,,	20	May 16	May 20	20	Confluent ..	..	June 1	..	Unvaccinated	..	..	..
342	C. E. C...	M.	36 ,,	21	..	..	21	Discrete ..	June 3	..	13	Infancy ..	2	..	..
343	E. E. ..	F.	9 ,,	26	May 23	May 24	26	Semi-Confluent	July 8	..	43	Unvaccinated	..	..	..
344	H. S. ..	M.	29 ,,	27	..	25	27	Discrete ..	July 15	..	35	Infancy ..	2	..	..
345	N. S. D...	M.	10 ,,	29	May 27	29	29	Confluent ..	..	June 9	..	Unvaccinated	..	..	..
346	H. W. ..	M.	12 ,,	30	27	28	31	Discrete ..	July 22	..	52	Unvaccinated	..	..	..
347	A. L. H...	F.	7 ,,	June 1	29	31	June 1	Semi-Confluent	July 8	..	37	Unvaccinated	..	..	..
348	E. E. ..	F.	27 ,,	5	June 2	June 5	5	Discrete ..	July 1	..	40	Unvaccinated	..	..	..
349	F. H. ..	M.	26 ,,	7	3	6	7	Discrete ..	June 24	..	17	Infancy ..	1	..	..
350	R. R. ..	M.	45 ,,	8	5	7	8	Discrete ..	June 24	..	16	Infancy ..	3	..	..
351	E. R. ..	F.	54 ,,	9	2	5	9	Discrete ..	June 24	..	15	Infancy ..	2	..	..
352	D. R. ..	M.	23 ,,	10	..	..	10	Discrete ..	June 24	..	14	Infancy ..	2	..	..
353	W. H. .	M.	34 ,,	9	..	..	9	Discrete ..	June 24	..	15	Infancy ..	3	..	..
354	E. B. ..	F.	32 ,,	June 11	June 7	June 10	June 11	Discrete ..	July 22	..	41	Infancy ..	4	..	..
355	W. M. ..	M.	16 ,,	16	12	15	17	Discrete ..	July 8	..	21	Infancy ..	1	..	..
356	S. H. ..	F.	40 ,,	18	12	..	18	Discrete ..	July 8	..	20	Infancy ..	2	..	Rash appeared on 14th or 15th of June in both cases Baby now, April 1905, shows no signs whatever of having had small-pox.
357	C. H. ..	M.	14 mos.	18	12	..	18	Discrete ..	July 8	..	20	June 1, 1904	3	..	
358	W. R. ..	M.	10 yrs.	20	..	..	20	Confluent ..	August 5	..	46	Unvaccinated	..	..	..
359	P. E. ..	F.	26 ,,	21	June 17	June 19	21	Discrete ..	July 15	..	24	Infancy ..	2	..	..
360	J. M. ..	M.	56 ,,	29	27	29	29	Confluent ..	..	July 6	..	Infancy ..	4	..	..
361	G. E. ..	M.	45 ,,	22	..	..	22	Discrete ..	July 15	..	23	Infancy ..	2	..	..
362	J. E. N.	M.	42 ,,	30	June 26	June 30	30	Confluent ..	..	July 9	..	Unvaccinated	..	..	..
363	D. S. ..	M.	34 ,,	July 2	..	July 1	July 2	Discrete ..	Aug. 5	..	34	Infancy ..	2	..	..
364	J. B. ..	M.	17 ,,	3	..	1	3	Semi-confluent	Aug. 19	..	47	Unvaccinated	..	..	..
365	A. R. ..	M.	7 ,,	3	July 1	3	3	Semi-confluent	Aug. 19	..	47	Unvaccinated	..	..	..
366	S. N. ..	M.	19 ,,	3	1	3	4	Confluent ..	Sept. 24	..	82	Unvaccinated	..	..	..
367	M. N. ..	F.	15 ,,	3	1	3	4	Confluent ..	Oct. 27	..	115	Unvaccinated	..	..	..
368	J. W. O.	M.	10 ,,	18	14	16	18	Confluent ..	..	July 27	..	Unvaccinated	..	..	..
369	C. L. ..	F.	31 ,,	19	16	19	19	Confluent ..	..	July 28	..	Unvaccinated	..	..	..
370	E. J. W.	F.	36 ,,	19	17	18	19	Discrete ..	Sept. 7	..	50	Infancy ..	2	..	Abscesses.
371	B. B. ..	M.	22 ,,	19	15	18	19	Discrete ..	Aug. 5	..	17	Infancy ..	2	..	..
372	J. C. ..	M.	38 ,,	19	17	19	19	Confluent ..	..	July 28	..	Infancy ..	2	..	..
373	M. N. ..	F.	43 ,,	19	16	18	19	Discrete modified	Aug. 5	..	17	Infancy ..	2	..	..
374	S. B. ..	F.	31 ,,	20	14	18	20	Confluent ..	..	July 29	..	Unvaccinated	..	..	..
375	A. S. ..	M.	12 ,,	20	17	18	20	Confluent ..	Sept. 24	..	66	Unvaccinated	..	..	..
376	A. C. ..	M.	20 ,,	20	18	20	20	Confluent ..	Oct. 4	..	76	Unvaccinated	..	..	..
377	W. L. ..	M.	15 ,,	20	15	17	20	Semi-confluent	Sept. 26	..	68	Unvaccinated	..	..	..
378	A. H. ..	F.	19 ,,	20	17	20	20	Discrete modified	Aug. 5	..	16	Infancy ..	3	..	..
379	L. D. ..	M.	19 ,,	21	18	20	21	Discrete ..	Aug. 5	..	15	Infancy ..	3	..	..
380	H. L. ..	M.	15 ,,	21	18	21	21	Confluent ..	..	July 31	..	Unvaccinated	..	..	..
381	C. H. ..	F.	34 ,,	22	17	22	22	Discrete ..	Aug. 12	..	21	Infancy ..	3	..	..

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital.								
				1904.	1704.	1904.	1904.		1904.	1904.					
332	L. B. ..	F.	28 yrs.	July 22	..	July 21	July 22	Confluent ..	..	Aug. 1	..	Unvaccinated	..	..	..
333	A. S. ..	M.	8 ,,	23	July 19	July 22	23	Discrete ..	Aug. 19	..	27	Unvaccinated	..	..	..
334	M. W. ..	F.	41 ,,	23	21	23	24	..	Aug. 5	..	12	Infancy ..	4	..	Doubtful case.
335	F. H. ..	M.	21 ,,	24	21	23	24	Discrete modified	Sept. 2	..	40	Infancy ..	3	..	..
336	M. E. R.	F.	32 ,,	24	..	..	24	Discrete modified	Aug. 5	..	12	Infancy ..	4	..	..
337	A. F. ..	F.	22 ,,	27	July 22	July 26	27	Semi-confluent	Sept. 12	..	47	Unvaccinated	..	..	..
338	L. C. ..	F.	46 ,,	29	27	28	29	Semi-confluent	Sept. 2	..	35	Infancy ..	2	..	..
339	W. B. ..	M.	53 ,,	29	24	27	29	Discrete ..	Aug. 26	..	28	Infancy ..	2	..	..
390	J. T. N. ..	M.	17 ,,	Aug. 2	31	Aug. 1	Aug. 2	Discrete ..	Sept. 2	..	31	Unvaccinated	..	..	Vaccinated July 4th, after removal of first case. No reaction and lymph probably removed immediately afterwards.
391	A. L. ..	M.	5 ,,	Aug. 4	July 31	Aug. 3	Aug. 4	Confluent ..	Sept. 12	..	39	Unvaccinated	..	..	..
392	E. L. ..	F.	8 mos.	4	..	3	4	Discrete ..	Aug. 19	..	15	Unvaccinated	..	..	..
393	L. T. ..	M.	13 yrs.	5	Aug. 1	4	5	Confluent ..	Sept. 12	..	38	Unvaccinated	..	..	..
394	A. S. ..	M.	17 ,,	5	2	5	5	Confluent ..	Sept. 16	..	42	Unvaccinated	..	..	..
395	W. S. ..	M.	14 ,,	5	1	4	5	Semi-confluent ..	Oct. 14	..	70	Unvaccinated	..	..	..
396	D. H. ..	M.	6 ,,	5	3	4	6	Confluent ..	Oct. 6	..	61	Unvaccinated	..	..	..
397	W. S. ..	M.	9 mos.	7	..	..	7	Confluent ..	..	Aug. 14	..	Unvaccinated	..	..	..
398	J. W. ..	F.	14 yrs.	7	Aug. 4	Aug. 7	7	Confluent ..	Sept. 16	..	40	Unvaccinated	..	..	..
399	G. E. F. ..	M.	2½ ,,	8	6	8	8	Confluent ..	Sept. 12	..	35	Unvaccinated	..	..	..
400	A. W. ..	F.	25 ,,	9	4	7	9	Semi-confluent	Sept. 16	..	38	Unvaccinated	..	..	..
401	W. F. ..	M.	31 ,,	9	..	8	9	Confluent (haemorrhagic)	..	Aug. 19	..	Unvaccinated	..	..	..
402	A. R. ..	M.	15 ,,	9	Aug. 5	8	9	Confluent ..	Oct. 27	..	79	Unvaccinated	..	..	..
403	E. B. ..	M.	14 ,,	10	7	10	10	Confluent ..	Sept. 24	..	45	Unvaccinated	..	..	..
404	M. F. F.	M.	24 ,,	10	..	10	10	Confluent ..	Sept. 12	..	33	Unvaccinated	..	..	..
405	H. W. ..	M.	8 ,,	11	..	..	11	Discrete ..	Sept. 7	..	27	Unvaccinated	..	..	..
406	A. W. ..	F.	4 ,,	11	..	..	11	Discrete (very full)	Sept. 7	..	27	Unvaccinated	..	..	..
407	N. W. ..	M.	32 ,,	11	..	..	11	Discrete modified	Sept. 7	..	27	Infancy ..	3	..	..
408	M. E. F.	F.	30 ,,	11	Aug. 9	Aug. 11	11	Discrete ..	..	Aug. 14	..	Unvaccinated	..	..	Serous effusion on brain
409	G. F. ..	M.	2 ,,	11	9	11	11	Confluent ..	Oct. 4	..	54	Unvaccinated		..	..
410	L. T. ..	F.	61 ,,	11	9	11	11	Confluent ..	Sept. 24	..	44	Infancy ..	..	..	..
411	B. J. ..	F.	24 yrs.	Aug. 12	Aug. 4	Aug. 8	Aug. 12	Semi-Confluent	Sept. 12	..	31	Infancy ..	2	..	..
412	J. N. ..	M.	22 ,,	12	8	12	13	Discrete modified	Aug. 31	..	18	Infancy ..	3	..	..
413	A. G. ..	M.	17 ,,	13	8	12	13	Confluent	..	Aug. 20	..	Unvaccinated	..	..	..
414	M. E. R.	F.	20 ,,	13	9	12	13	Confluent ..	Nov. 28	..	107	Infancy ..	3	..	..
415	H. H. ..	F.	26 ,,	14	8	11	14	Discrete modified	Sept. 2	..	19	Infancy ..	3	..	..
416	K. N. ..	F.	19 ,,	14	11	13	14	Confluent ..	Sept. 26	..	43	Unvaccinated	..	..	..
417	A. W. ..	F.	31 ,,	14	11	14	14	Discrete ..	Sept. 12	..	29	Infancy ..	4	..	..
418	E. W. ..	M.	24 ,,	14	11	13	14	Discrete modified	Aug. 31	..	17	Infancy ..	3	..	..
419	E. S. ..	M.	27 ,,	13	9	13	14	Discrete modified	Aug. 31	..	17	Infancy ..	4	..	..
420	M. W. A.	M.	39 ,,	15	9	13	15	Discrete modified	Sept. 7	..	23	Infancy ..	3	..	..
421	E. B. ..	F.	33 ,,	15	10	15	15	Confluent ..	..	Aug. 26	..	Infancy ..	2	..	Said to have had Small-pox in infancy

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
				1904.	1904.	1904.	1904		1904.	1904.					
422	F. B.	F.	13 yrs.	Aug. 15	Aug. 12	Aug. 14	Ang. 15	Confluent	Nov. 7	..	84	Unvaccinated	..	..	..
423	E. M.	F.	43 ,,	15	..	..	15	Discrete modified	Aug. 31	..	16	Infancy	3	..	..
424	J. R.	F.	5 ,,	15	13	14	15	Confluent	Oct. 6	..	54	Unvaccinated	..	..	..
425	A. P.	F.	44 ,,	15	13	15	15	Discrete modified	Sept. 2	..	18	Infancy	2	..	..
426	A. E. S.	M.	5 ,,	15	12	14	15	Semi-Confluent	Oct. 6	..	52	Unvaccinated	..	..	..
427	J. W.	M.	32 ,,	15	13	15	15	Discrete	Sept. 12	..	28	Infancy	2	..	..
428	C. W.	M.	11 ,,	15	13	15	16	Confluent (Haemorrhagic)	..	Aug. 21	..	Unvaccinated	..	..	..
429	D. W.	F.	45 ,,	16	12	16	17	Discrete	Sept. 16	..	30	Infancy	1	..	..
430	E. G.	M.	27 ,,	17	..	..	17	Confluent	..	Aug. 24	..	Unvaccinated	..	..	Incoherent from admission.
431	M. C.	F.	21 ,,	17	Aug. 9	Aug. 16	17	Confluent	Sept. 26	..	40	Unvaccinated	..	..	..
432	S. J. C.	F.	40 ,,	17	..	..	18	Discrete modified	Sept. 2	..	15	Infancy	1	..	Said to have had Small-pox at birth; two or three scars noted.
433	S. H.	F.	36 ,,	19	Aug. 16	Aug. 18	19	Discrete modified	Sept. 7	..	19	Unvaccinated in infancy, but vaccinated on Aug. 8			
434	E. M. H.	F.	14 ,,	19	16	18	19	Discrete modified	Sept. 7	..	19	Unvaccinated in infancy, but vaccinated on Aug. 8			
435	B. P.	F.	35 ,,	20	18	21	21	Discrete modified	Sept. 12	..	22	Infancy	3	..	..
436	N. S.	F.	22 ,,	21	18	20	22	Discrete modified	Sept. 2	..	11	Infancy	2	..	..
437	T. H. H.	M.	38 ,,	22	..	19	22	Discrete	Sept. 7	..	16	Unvaccinated in infancy, but vaccinated on Aug. 8			
438	E. H.	M.	10 ,,	22	..	..	22	Discrete modified	Sept. 7	..	16	Unvaccinated in infancy, but vaccinated on Aug. 8			
439	D. P.	M.	33 ,,	22	Aug. 20	Aug. 21	22	Discrete modified	Sept. 12	..	21	Infancy	6	..	..
440	A. J. H.	F.	19 ,,	22	18	23	23	Discrete	Sept. 2	..	10	Infancy	4	..	..
441	E. A. B.	F.	44 ,,	24	21	23	24	Semi-Confluent	Sept. 21	..	28	Infancy	3	..	..
442	H. T.	M.	19 ,,	25	22	24	25	Confluent	Oct. 6	..	42	Unvaccinated	..	..	..
443	S. B. A.	M.	8 ,,	24	..	25	25	Confluent	Dec. 3	..	100	Unvaccinated	..	..	..
444	J. C. A.	M.	6 ,,	24	..	25	25	Confluent	Oct. 8	..	44	Unvaccinated	..	..	..
445	D. L.	M.	31 ,,	24	Aug. 21	25	25	Confluent	Sept. 21	..	27	Unvaccinated	..	..	..
446	S. S.	F.	36 ,,	25	..	25	26	Semi-Confluent	Nov.: 3	..	69	Infancy	2	..	..
447	C. S.	M.	6 ,,	25	..	25	26	Semi-Confluent	Oct. 27	..	62	Unvaccinated	..	..	..
448	F. V. S.	M.	7 ,,	25	..	25	26	Semi-Confluent	Nov. 3	..	69	Unvaccinated	..	..	..
449	G. T. C.	M.	8 ,,	26	Aug. 22	25	26	Confluent	Oct. 24	..	59	Unvaccinated	..	..	..
450	M. A. A.	F.	34 ,,	26	..	..	27	Confluent	..	Sept. 1	..	Infancy	2	..	Haemoptysis.
451	E. S.	F.	22 ,,	27	Aug. 24	Aug. 26	27	Discrete	Sept. 16	..	20	Infancy			

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
				1904	1904	1904	1904		1904	1904					
454	G. B. ..	M.	28 yrs.	Ang. 27	Aug. 23	Aug. 26	Aug. 27	Discrete modified	Sept. 7	..	11	Infancy ..	3	..	..
455	W. W. ..	M.	10 ,,	27	22	..	27	Semi-Confluent	Oct. 17	..	51	Unvaccinated	..	..	..
456	G. B. ..	M.	27 ,,	27	26	Aug. 27	27	Discrete ..	Sept. 16	..	20	Infancy ..	3	..	..
457	C. E. ..	M.	40 ,,	28	..	28	28	Confluent ..	Oct. 11	..	44	Infancy ..	2	..	..
458	E. B. G.	M.	29 ,,	28	Aug. 25	27	28	Confluent ..	..	Aug. 30	..	Unvaccinated	..	..	..
459	H. D. B.	M.	19 ,,	28	25	27	28	Discrete ..	Oct. 11	..	44	Infancy ..	3	..	..
460	N. S. ..	F.	8 ,,	28	..	28	28	Discrete ..	Oct. 29	..	..	Unvaccinated		..	..
461	A. H. ..	F.	18 ,,	29	Aug. 23	26	29	Discrete ..	Nov. 9	..	72	Infancy ..	2	..	Abscesses, tubercular elbow joint.
462	E. H. ..	F.	57 ,,	29	23	29	29	Discrete ..	Sept. 7	..	9	Unvaccinated	..	..	Small-pox 35 years ago.
463	T. B. G...	M.	16 ,,	29	27	29	29	Discrete ..	Sept. 12	..	14	Infancy ..	3	..	..
464	A. B. ..	M.	26 ,,	29	26	29	29	Discrete ..	Sept. 12	..	14	Infancy ..	3	..	..
465	J. L. ..	F.	21 ,,	29	25	29	29	Discrete ..	Sept. 12	..	14	Infancy ..	2	..	..
466	W. G. H.	M.	21 ,,	29	26	28	29	Discrete ..	Oct. 11	..	43	Unvaccinated	..	..	..
467	P. P. ..	M.	23 ,,	30	27	29	30	Confluent ..	Oct. 29	..	60	Unvaccinated	..	..	..
468	H. H. ..	M.	40 ,,	30	..	..	30	Discrete ..	Sept. 12	..	13	Infancy ..	3	..	..
469	J. W. H.	M.	22 ,,	Aug. 30	Aug. 27	Aug. 29	Aug. 30	Discrete ..	Oct. 17	..	48	Unvaccinated	..	..	..
470	C. W. ..	M	18 ,,	30	27	29	30	Semi-Confluent	Oct. 17	..	48	Unvaccinated	..	..	..
471	L. H. ..	F.	14 ,,	30	27	29	30	Discrete ..	Oct. 14	..	45	Infancy ..	3	..	..
472	L. D. ..	F.	22 ,,	30	27	30	30	Discrete ..	Sept. 16	..	17	Infancy ..	3	..	..
473	E. A. B.	F.	32 ,,	31	27	30	31	Discrete ..	Sept. 19	..	19	Infancy ..	3	..	..
474	F. R. ..	M.	35 ,,	31	28	31	31	Discrete ..	Sept. 7	..	7	Infancy ..	4	..	..
475	S. F. ..	M.	33 ,,	31	27	31	31	Discrete ..	Sept. 14	..	14	Infancy ..	4	..	..
476	J. H. C.	M.	10 ,,	31	29	31	Sept. 1	Confluent ..	..	Sept. 9	..	Unvaccinated	..	..	..
477	J. R. ..	M.	43 ,,	Sept. 1	29	Sept. 1	1	Discrete ..	Sept. 24	..	23	Infancy ..	3	..	..
478	F. E. ..	M.	18 ,,	1	29	Aug. 31	1	Confluent ..	Nov. 28	..	88	Unvaccinated	..	..	..
479	A. B. F...	M.	13 ,,	Aug. 31	27	30	1	Semi-Confluent	Oct. 27	..	56	Infancy ..	1	..	..
480	D. S. G.	M.	53 ,,	Sept 1	27	31	1	Confluent ..	..	Sept. 21	..	Infancy ..	3	..	..
481	H. A. S...	F.	26 ,,	2	29	Sept. 1	2	Confluent ..	..	Sept. 11	..	Unvaccinated	..	..	..
482	E. S. ..	M.	4 dys.	1	..	..	2	Semi-Confluent	..	Sept. 14	..	Unvaccinated	..	..	..
483	J. W. ..	M.	37 yrs.	2	Aug. 30	Sept. 1	2	Discrete ..	Sept. 16	..	14	Infancy ..	3	..	..
484	L. P. ..	F.	8 ,,	1	30	1	2	Discrete ..	Oct. 22	..	50	Unvaccinated	..	..	..
485	M. H. B.	F.	23 ,,	2	29	2	2	Confluent ..	Nov. 12	..	71	Unvaccinated	..	..	Speech became affected, slow, thick, and hesitating. Still bad April 1, 1905.
486	J. H. ..	M.	26 ,,	1	26	Aug. 29	2	Discrete ..	Sept. 16	..	14	Infancy ..	4	..	..
487	L. H. ..	F.	2½ ,,	2	26	29	2	Discrete ..	Oct. 24	..	52	Unvaccinated	..	..	..
488	Not a case of small-pox.				..	..							..		Mother of 487.
489	D. R. ..	F.	45 yrs.	Sept. 2	Aug. 30	Sept. 1	Sept. 2	Confluent ..	Oct. 17	..	45	Infancy ..	2	..	..
490	G. P. ..	M.	5 ,,	2	30	1	2	Confluent ..	Oct. 29	..	57	Unvaccinated	..	..	..
491	B. M. ..	F.	11 ,,	1	30	1	2	Confluent ..	Nov. 7	..	66	Unvaccinated	..	..	..
492	P. G. ..	M.	12 ,,	2	29	1	2	Confluent ..	Sept. 16	..	14	Unvaccinated	..	..	..
493	G. L. ..	M.	26 ,,	2	30	1	2	Confluent ..	Oct. 17	..	45	Unvaccinated	..	..	..
494	E. F. ..	F.	36 ,,	2	30	2	2	Confluent ..	Nov. 23	..	82	Unvaccinated	..	..	..
495	T. W. ..	M.	16 ,,	2	29	Aug. 31	3	Discrete ..	Oct. 27	..	54	Unvaccinated	..	..	..
496	A. G. ..	M.	5 ,,	2	31	Sept. 2	3	Confluent ..	..	Sept. 24	..	Unvaccinated	..	..	..

Register No.	Name.	Sex.	Age.	Date of Notification.	Date of Onset	Date of Rash.	Date of Admission to Hospital	Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				1904	1904	1904	1904		1904	1904					
497	M. E. F.	F.	14 yrs	Sept. 2	Aug. 30	Sept. 1	Sept. 3	Discrete ..	Oct. 20	..	47	Unvaccinated	..	..	..
478	E. S. ..	F.	25 ,,	2	30	1	3	Discrete ..	Nov. 5	..	63	Unvaccinated	..	..	..
499	M E. F.	F.	11 ,,	2	30	1	3	Confluent ..	Oct. 17	..	44	Infancy ..	..	..	..
500	P. B. ..	M.	15 ,,	2	31	2	3	Confluent ..	Nov. 26	..	84	Doubtful ..	none	..	Lost sight of left eye. Corneal ulcer. Said to bave been vaccinated in infancy, no evidence
501	G. B. ..	M.	4 ,,	2	30	2	3	Confluent ..	..	Sept. 10	..	Unvaccinated	..	..	..
502	J. R. L.	M.	26 ,,	3	31	3	3	Semi-Confluent	Sept. 16	..	13	Infancy ..	2	..	..
503	B O. ..	M.	13 ,,	3	31	3	3	Semi-Confluent	Sept. 21	..	18	Unvaccinated	..	..	..
504	R H. B.	M.	14 ,,	3	30	3	4	Semi-Confluent	Sept 19	..	15	Infancy ..	3	..	..
505	J. W. ..	M.	40 ,,	3	30	2	4	Semi-Confluent	Sept. 29	..	25	Infancy ..	2	..	..
506	M. E B.	F.	2 ,,	3	31	3	4	Semi-Confluent	Nov. 3	..	60	Unvaccinated	..	..	..
507	A. D. ..	F.	10 ,,	3	31	2	4	Semi-Confluent	Nov. 15	..	72	Unvaccinated	..	..	..
508	H A. R.	F.	37 ,,	3	28	1	4	Discrete modified	Sept. 21	..	17	Infancy ..	2	..	..
509	H. W. ..	M.	21 ,,	3	30	3	4	Semi-Confluent	Oct. 24	..	50	Unvaccinated	..	..	..
510	A. B. ..	M.	21 ,,	3	31	3	4	Confluent ..	Oct. 24	..	50	Unvaccinated	..	..	..
511	W. S. ..	M.	30odd	3	31	3	4	Discrete ..	Sept. 26	..	22	Infancy ..	2	..	..
512	W. N. ..	M.	24 yrs.	3	31	3	5	Semi-Confluent	Sept. 19	..	14	Infancy ..	3	..	..
513	T. S. ..	M.	56 ,,	4	31	3	5	Haemorrhagic ..	..	Sept. 6	..	Infancy ..	3	..	..
514	M. A. B.	F.	19 ,,	4	Sept. 1	3	5	Discrete ..	Sept. 19	..	14	Infancy ..	3	..	..
515	A. A. ..	M.	21 ..	4	2	3	5	Severe Discrete	Oct. 24	..	49	Unvaccinated	..	..	..
516	F T ..	M.	30 ..	4	..	4	5	Discrete ..	Sept 19	..	14	Infancy ..	3	..	..
517	Second entry of 514 case above														
518	L A S.	F.	36 yrs	Sept 4	Sept. 1	2	5	Discrete ..	Sept. 26	..	21	Infancy ..	2	..	..
519	E. G. ..	M.	29	4	1	3	5	Semi-Confluent modified	Sept. 24	..	19	Infancy ..	2	..	..
520	B C.	M.	49 ,,	5	..	3	5	Discrete ..	Sept. 19	..	14	Infancy ..	3	..	..
521	C ..	F.	11 ,,	5	Sept. 2	4	5	Discrete ..	Sept. 29	..	24	Infancy ..	3	..	..
522	A. F. F.	..	27 ,,	5	1	5	5	Discrete ..	Oct. 24	..	49	Infancy ..	1	..	..
523	H. K. ..	M.	22 ,,	5	3	5	6	Discrete ..	Sept. 19	..	13	Infancy ..	no record	..	..
524	H. G. ..	F.	35 ,,	5	3	5	6	Discrete ..	Sept. 21	..	15	Infancy ..	4	23 yrs. ago.	Re-vaccination showed 4 scars.
525	H. B. ..	M.	28 ,,	5	1	3	6	Discrete ..	Sept. 19	..	13	Infancy ..	3	..	..
526	M. V. T.	M.	7 ,,	5	2	5	6	Discrete ..	Oct. 22	..	46	Unvaccinated	..	..	..
527	A. H. S. ..	M.	18 ,,	5	3	5	6	Confluent ..	..	Sept. 15	..	Unvaccinated	..	..	Vacctd on Aug. 27.
528	E. J. ..	M.	38 ,,	5	3	5	6	Discrete ..	Sept. 24	..	18	Infancy ..	2	..	..
529	C. N. ..	M.	37 ,,	6	3	5	7	Discrete ..	Oct. 15	..	38	Infancy ..	2	..	..
530	A. E. C.	F.	31 ,,	6	3	5	7	Semi-Confluent	Nov. 18	..	72	Unvaccinated	..	..	Boils.
531	R. G. ..	M.	21 ,,	6	3	5	7	Semi-Confluent	..	Sept. 14	..	Unvaccinated	..	..	Escaped from Hospital on Sept. 8, in the night, clad in a shirt only, and ran home—about a mile.
532	G. B. ..	M.	16 ,,	6	1	5	7	Semi-Confluent	Nov. 3	..	57	Unvaccinated	..	..	..

Register No.	Name.	Sex.	Age.	Date of Notification.	Date of Onset.	Date of Rash.	Date of Admission to Hospital	Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				1904	1904	1904	1904		1904	1904					
533	H. B. ..	M.	13 yrs.	Sept. 6	Sept. 3	Sept. 5	Sept. 7	Discrete ..	Oct. 17	..	40	Unvaccinated	..	..	..
534	E. B. ..	F.	35 "	6	1	4	7	Discrete ..	Sept. 19	..	12	Infancy ..	No record	..	..
535	G. I. J. ..	F.	32 "	6	..	4	7	Confluent ..	..	Sept. 19	..	Unvaccinated	..	..	..
536	W. D. ..	M.	20 "	6	Sept. 2	4	7	Semi-Confluent	Oct. 15	..	38	Unvaccinated	..	..	..
537	R. F. ..	F.	9 "	6	3	5	7	Semi-Confluent	Nov. 1	..	55	Unvaccinated	..	..	..
538	B. G. ..	F.	23 "	6	..	3	7	Confluent ..	Oct. 17	..	40	Unvaccinated	..	..	..
539	E. W. ..	F.	23 "	5	..	..	8	Discrete modified	Sept. 22	..	14	Infancy ..	3	..	..
540	C. C. ..	M.	35 "	6	Sept. 1	Sept. 4	8	Discrete modified	Sept. 24	..	16	Infancy ..	3	..	..
541	S. C. ..	M.	45 "	7	4	8	8	Discrete ..	Nov. 3	..	56	Infancy ..	3	..	..
542	M. M. ..	F.	35 "	7	3	6	8	Discrete ..	Sept. 21	..	13	Infancy ..	2	..	..
543	M. G. O.	F.	28 "	8	5	7	9	Discrete ..	Sept. 22	..	13	Infancy ..	3	..	..
544	H. M. S.	F.	11 "	9	6	8	9	Semi-Confluent	Oct. 20	..	41	Unvaccinated	..	..	..
545	J. W. B.	M.	22 "	10	7	10	10	Discrete ..	Oct. 22	..	42	Unvaccinated	..	..	..
546	E. F. ..	F.	15 "	11	8	10	11	Semi-Confluent	Nov. 7	..	57	Unvaccinated	..	..	..
547	H. G. ..	F.	18 "	12	8	11	13	Discrete ..	Sept. 23	..	10	Infancy ..	2	..	..
548	J. H. R.	M.	37 "	13	8	9	13	Semi-Confluent	Oct. 24	..	41	Unvaccinated	..	..	..
549	A. N.	F.	25 "	13	5	..	13	Discrete ..	Nov. 18	..	66	Unvaccinated	..	..	..
550	E. T. ..	F.	15 "	13	9	12	13	Semi-Confluent	Oct. 20	..	37	Unvaccinated	..	..	..
551	A. L. H.	F.	30 "	14	7	12	14	Discrete ..	Oct. 10	..	26	Infancy ..	3	..	..
552	C. S. ..	F.	50 "	14	11	14	14	Discrete ..	Sept. 22	..	8	Infancy ..	1	..	..
553	M. E. L.	F.	25 "	14	9	12	14	Discrete ..	Sept. 22	..	8	Infancy ..	3	..	..
554	A. H. W.	M.	44 "	15	13	15	15	Confluent ..	Nov. 7	..	53	Infancy ..	3	17 yrs. before	Re-vaccination 17 years ago, because sister contracted small-pox.
555	R. P. ..	M.	39 "	15	14	15	15	Confluent ..	..	Sept. 24	..	Unvaccinated	..	..	..
556	F. S. ..	M.	18 "	15	11	15	15	Discrete ..	Nov. 15	..	61	Unvaccinated	..	..	Vaccinated Sept. 11.
557	J. C. ..	M.	23 "	15	13	15	15	Confluent ..	..	Sept. 27	..	Unvaccinated	..	..	..
558	M. A. T.	F.	16 "	16	13	16	16	Discrete ..	Oct. 14	..	28	Infancy ..	1	..	..
559	L. S. ..	F.	47 "	16	10	15	16	Discrete ..	Oct. 6	..	20	Infancy ..	2	..	..
560	M. E. L.	F.	14 "	16	12	15	16	Semi-Confluent	Nov. 7	..	52	Unvaccinated	..	..	..
561	A. R. ..	M.	18 "	16	13	15	16	Discrete ..	Oct. 24	..	38	Unvaccinated	..	..	..
562	A. B. ..	F.	29 "	17	14	..	17	Discrete modified	Oct. 6	..	19	Infancy ..	3	..	..
563	S. B. ..	F.	9 "	17	1	..	17	Discrete ..	Oct. 6	..	19	Unvaccinated	..	..	..
564	S. J. T. ..	F.	41 "	17	..	..	17	Discrete ..	Dec. 3	..	77	Unvaccinated	..	..	..
565	C. C. ..	F.	67 "	18	Sept. 15	Sept. 18	18	Discrete ..	Oct. 6	..	18	Infancy ..	1	..	..
566	E. J. L.	F.	33 "	18	14	..	18	Discrete ..	Oct. 22	..	34	Infancy ..	2	..	..
567	M. L. ..	F.	35 "	18	12	..	18	Discrete ..	Nov. 28	..	71	Unvaccinated	..	..	Vaccinated Sept. 15.
568	L. M. ..	F.	32 "	17	14	..	17	Confluent ..	..	Sept. 25	..	Unvaccinated	..	..	..
569	E. G. ..	F.	15 "	17	..	..	17	Discrete ..	Oct. 8	..	21	Unvaccinated	..	..	..
570	P. T. ..	M.	31 "	18	Sept. 15	Sept. 18	18	Discrete ..	Oct. 12	..	24	Infancy ..	2	..	..
571	E. T. ..	F.	9 "	18	15	18	18	Confluent ..	Nov. 1	..	44	Unvaccinated	..	..	..
572	W. H. H.	M.	29 "	18	15	18	18	Confluent ..	..	Oct. 1	..	Unvaccinated	..	..	..
573	T. B. ..	M.	27 "	18	11	..	19	Discrete ..	Sept. 24	..	5	Infancy ..	2	..	..
574	J. T. C. ..	M.	34 "	19	16	18	19	Discrete ..	Oct. 20	..	31	Infancy ..	3	..	..
575	R. T. ..	M.	56 "	19	15	18	19	Discrete ..	Nov. 3	..	45	Infancy ..	2	..	..

Register No.	Name.	Sex.	Age.	Date of Notification.	Date of Onset.	Date of Rash.	Date of Admission to Hospital	Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				1904.	1904.	1904.	1904.		1904.	1904.					
576	S. L. D.	M.	11 mos.	Sept. 18	Sept. 16	Sept. 13	Sept. 19	Semi-Confluent	..	Oct. 7	..	Unvaccinated	..	..	Broncho-Pneumonia
577	E. T. ..	F.	51 yrs.	19	16	19	19	Discrete ..	Oct. 15	..	26	Infancy ..	4	..	..
578	A. G. ..	F.	56 ,,	18	13	..	19	Discrete ..	Oct. 6	..	17	Infancy ..	3	..	..
579	B. S. ..	M.	6 ,,	19	18	Sept. 19	19	Semi-Confluent	Dec. 7	..	79	Unvaccinated	..	..	..
580	J. L. ..	F.	13 ,,	19	17	19	19	Discrete ..	Oct. 29	..	40	Unvaccinated	..	..	..
581	E. P. ..	F.	4 ,,	19	16	..	19	Confluent ..	..	Sept. 25	..	Unvaccinated	..	..	..
582	W. H. ..	M.	56 ,,	19	19	Sept. 19	19	Confluent ..	..	Sept. 27	..	Infancy ..	2	..	..
583	L. B. ..	F.	16 ,,	20	..	17	20	Semi-Confluent	Nov. 26	..	67	Unvaccinated	..	..	Vaccinated Sept 10.
584	E. H. ..	F.	15 ,,	20	Sept. 17	19	20	Discrete ..	Dec. 7	..	78	Unvaccinated	..	..	..
585	J. B. ..	M.	20 ,,	20	17	20	20	Discrete ..	Oct. 14	..	24	Infancy ..	3	..	..
586	E. P. ..	F.	45 ,,	20	18	20	20	Haemorrhagic ..	..	Sept. 26	..	Unvaccinated	..	..	..
587	J. W. T.	M.	46 ,,	20	15	19	20	Discrete ..	Nov. 12	..	53	Infancy ..	No record	..	
588	M. M. ..	F.	46 ,,	21	16	20	21	Confluent ..	..	Oct. 1	..	Doubtful ..	none	..	Large ulcers on legs. No evidence of vaccination.
589	E. H. ..	F.	58 ,,	21	17	20	21	Semi-Confluent	Nov. 15	..	55	Unvaccinated	..	..	Haemorrhages into pustules. Said to have had small-pox 53 years ago. Corneal ulcer, lost sight of left eye.
590	C. S. ..	M.	41 ,,	21	18	20	21	Discrete ..	Oct. 20	..	29	Infancy ..	2	..	..
591	J. H. ..	M.	46 ,,	21	18	21	21	Discrete ..	Nov. 1	..	41	Infancy ..	1	..	..
592	H. W. ..	M.	33 ,,	21	19	20	21	Discrete ..	Oct. 15	..	24	Infancy ..	4	10 or more yrs. ago	Said to have been re-vaccinated when small-pox was bad before, in 1895. Probably it was in 1892 or 1893. Anyhow there is no sign of the re-vaccination.
593	L. R. F...	M.	15 ,,	21	20	21	21	Discrete ..	Nov. 20	..	60	Infancy ..	1	..	..
594	T. B. ..	M.	54 ,,	21	19	20	21	Discrete ..	Oct. 6	..	15	Infancy ..	1	..	..
595	G. J. ..	M.	35 ,,	22	18	22	22	Discrete ..	Oct. 6	..	15	Infancy ..	1	..	..
596	H. H. ..	M.	15 ,,	22	19	21	22	Semi-Confluent	Dec. 10	..	79	Unvaccinated	..	..	" Boils."
597	H. L. ..	F.	11 ,,	22	19	21	22	Semi-Confluent	Nov. 1	..	40	Unvaccinated	..	..	..
598	J. S. ..	M.	53 ,,	22	20	22	22	Discrete ..	Oct. 22	..	30	Infancy ..	2	..	..
599	N. C. ..	F.	4 ,,	22	20	21	22	Discrete ..	Oct. 22	..	30	Unvaccinated	..	..	Vaccinated Sept. 10.
600	S. D. ..	M.	48 ,,	22	18	21	22	Semi-Confluent	..	Sept. 29	..	Unvaccinated	..	..	Never vaccinated successfully. Bronchitis.
601	K. N. ..	F.	26 ,,	22	20	21	22	Haemorrhagic ..	..	Sept. 27	..	Unvaccinated	..	..	Temperature rose to 109 2 just before death.
602	J. J. ..	F.	17 ,,	22	19	21	22	Confluent ..	Nov. 7	..	46	Unvaccinated	..	..	..

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
				1904	1904	1904	1904		1904	1904					
603	E. W. ..	M.	29 yrs.	Sept. 22	Sept. 17	Sept. 20	Sept. 22	Discrete ..	Oct. 20	..	28	Infancy ..	3	..	..
604	W. E. F.	M.	41 ,,	22	17	20	22	Discrete ..	Oct. 6	..	14	Infancy ..	1	..	..
605	C. K. ..	F.	40 ,,	22	18	22	22	Discrete ..	Oct. 29	..	37	Infancy ..	1	..	..
606	J. E. W.	F.	22 ,,	22	18	22	22	Confluent ..	Nov. 1	..	40	Unvaccinated	..	..	..
607	H. G. ..	M.	19 ,,	22	20	22	22	Confluent ..	Nov. 5	..	44	Unvaccinated	..	..	Admitted his brother (case 531) to the house when he escaped from the Hospital.
608	H. S. F.	M.	18 ,,	22	19	22	22	Discrete ..	Oct. 6	..	14	Infancy ..	2	..	
609	H. F. ..	M.	13 ,,	22	19	22	22	Discrete ..	Oct. 6	..	14	Infancy ..	2	..	Brothers of case 537.
610	C. F. ..	M.	6 ,,	22	19	22	22	Discrete ..	Nov. 26	..	65	Unvaccinated	..	..	Vacctd. Sept. 12.
611	T. H. ..	M.	36 ,,	22	15	17	22	Discrete ..	Oct. 15	..	23	Infancy ..	2	..	..
612	W. J. G.	M.	33 ,,	23	19	23	21	Discrete ..	Oct. 15	..	23	Infancy ..	3	..	..
613	H. P. ..	M.	19 ,,	23	19	22	23	Semi-Confluent	Nov. 5	..	43	Unvaccinated	..	..	..
614	F. J. ..	F.	6 ,,	23	19	22	23	Semi-Confluent	Dec. 7	..	75	Unvaccinated	..	..	..
615	A. I. ..	F.	12 ,,	23	19	21	23	Discrete ..	Nov. 11	..	49	Unvaccinated	..	..	..
616	J. S. ..	M.	13 ,,	23	20	23	23	Discrete ..	Nov. 9	..	47	Unvaccinated	..	..	..
617	M. L. W.	F.	27 ,,	22	..	..	21	Discrete modified	Oct. 8	..	17	Infancy ..	No record	..	..
618	H. G. ..	M.	5 dys.	..	..	..	6	Severe Discrete	..	Sept. 24	..	Unvaccinated	..	..	Baby came in with mother.
619	T. E. ..	F.	44 yrs.	Sept. 24	Sept. 21	Sept. 23	24	Discrete ..	Oct. 29	..	35	Infancy ..	1	..	..
620	M. W. ..	F.	48 ,,	23	21	22	23	Discrete ..	Oct. 8	..	15	Infancy ..	1	..	..
621	J. K. ..	M.	22 ,,	24	21	24	24	Semi-Confluent	Nov. 28	..	65	Unvaccinated	..	..	Boils.
622	T. E. P.	M.	21 ,,	24	21	23	24	Discrete ..	Oct. 14	..	20	Infancy ..	3	..	..
623	F. S. D.	M.	21 ,,	24	22	24	24	Discrete ..	Oct. 14	..	20	Infancy ..	3	..	..
624	L. O. E...	M.	19 ,,	24	21	23	24	Semi-Confluent	Nov. 11	..	48	Unvaccinated	..	..	..
625	E. R. ..	F.	23 ,,	25	22	24	25	Discrete ..	Oct. 15	..	20	Infancy ..	1	..	..
626	E. S. ..	M.	16 ,,	25	22	24	25	Confluent ..	..	Oct. 1	..	Unvaccinated	..	..	..
627	J. D. ..	M.	24 ,,	25	22	24	25	Discrete ..	Oct. 10	..	15	Infancy ..	2	..	Stated to have been revacctd. in 1901, but shows no marks.
628	A. H. ..	F.	41 ,,	26	19	24	26	Discrete ..	Nov. 18	..	53	Infancy ..	3	..	..
629	M. W. ..	F.	33 ,,	26	23	26	26	Discrete modified	Oct. 17	..	21	Infancy ..	2	..	..
630	C. T. ..	F.	23 ,,	26	23	26	26	Discrete ..	Oct. 6	..	10	Unvaccinated	..	..	Vacctd. Sept. 12.
631	M. A. W.	F.	17 ,,	26	23	25	26	Confluent ..	..	Oct. 5	..	Unvaccinated	..	..	Vaccination performed, but never successfully.
632	E. O. ..	M.	25 ,,	27	26	27	27	Discrete ..	Oct. 12	..	15	Infancy ..	4	..	..
633	S. A. A.	F.	29 ,,	27	25	26	27	Discrete ..	Nov. 12	..	46	Unvaccinated	..	..	..
634	E. B. ..	F.	49 ,,	27	23	25	27	Discrete ..	Oct. 24	..	27	Infancy ..	3	..	..
635	L. B. ..	F.	9 ,,	27	25	27	27	Discrete ..	Oct. 15	..	18	Infancy ..	4	..	..
636	A. W. ..	F.	39 ,,	27	23	25	27	Discrete ..	Nov. 15	..	49	Infancy ..	4	..	..
637	W. T. B.	M.	13 ,,	27	25	27	27	Discrete ..	Nov. 26	..	60	Unvaccinated	..	..	Vacctd. Sept. 15.
638	E. F. ..	M.	21 ,,	28	25	27	28	Discrete ..	Nov. 1	..	34	Unvaccinated	..	..	..
639	S. E. B.	F.	43 ,,	28	25	27	28	Discrete ..	Nov. 1	..	34	Infancy ..	1	..	..

Register No	Name.	Sex.	Age.	Date of Notification.	Date of Onset.	Date of Rash.	Date of Admission to Hospital	Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				1904	1904	1904	1904		1904	1904					
640	A. C.	M.	41 yrs.	Sept. 23	Sept. 25	Sept. 27	Sept. 23	Discrete	Oct. 24	..	26	Infancy	2	..	..
641	L. L.	F.	5 ,,	23	25	27	23	Semi-Confluent	Nov. 25	..	58	Unvaccinated	..	..	..
642	S. H. S.	M.	32 ,,	23	24	27	23	Discrete	Oct. 15	..	17	Infancy	2	..	..
643	M. C.	F.	18 ,,	23	27	23	23	Discrete	Oct. 15	..	17	Infancy	3	..	..
644	A. H.	M.	24 ,,	23	26	27	23	Discrete	Nov. 12	..	45	Unvaccinated	..	..	..
645	J. E. K.	F.	34 ,,	28	24	27	23	Discrete	Oct. 17	..	19	Infancy	4	..	..
646	F. W.	M.	24 ,,	29	25	23	29	Confluent	..	Nov. 11	..	Unvaccinated	..	..	Advanced in Phthisis Gangrene of Lungs
647	C. N.	F.	35 ,,	29	24	25	29	Discrete	Nov. 3	..	35	Infancy	6	..	..
648	J. I.	M.	43 ,,	29	26	28	29	Discrete	Nov. 3	..	35	Infancy	1	20 yrs. ago	Re-vacctd. 20 years ago—2 marks.
649	W. W. O.	M.	46 ,,	29	24	28	29	Confluent	Nov. 11	..	43	Infancy	2	..	..
650	J. N.	M.	39 ,,	29	25	29	29	Discrete	Oct. 17	..	18	Infancy	2	..	..
651	E. F.	F.	54 ,,	30	25	29	30	Discrete	Oct. 22	..	22	Infancy	2	..	..
652	A. N.	F.	36 ,,	30	24	29	30	Semi-Confluent	Nov. 18	..	49	Infancy	4	..	..
653	A. S.	M.	15 ,,	30	27	30	Oct. 1	Confluent	Nov. 26	..	56	Unvaccinated	..	..	..
654	F. C.	F.	17 ,,	Oct. 1	29	Oct. 1	2	Confluent	Dec. 7	..	66	Unvaccinated	..	..	..
655	A. J.	M.	8 ,,	4	..	Sept. 30	4	Discrete	Oct. 29	..	25	Unvaccinated	..	..	Vacctd. Sept. 23.
656	G. J.	M	16 ,,	4	Oct. 1	Oct. 3	4	Severe discrete	Dec. 12	..	69	Unvaccinated	..	..	Haematuria. vacctd. Sept. 30.
657	T. W. R.	M.	23 ,,	5	2	4	5	Discrete	Nov. 3	..	29	Infancy	3	..	..
658	J. W.	M.	22 ,,	6	3	5	6	Discrete	Nov. 1	..	26	Infancy	3	..	..
659	M. M.	F.	50 ,,	6	3	6	6	Discrete	Nov. 7	..	32	Infancy	2	..	Re-vacctd. Sept. 17, but not successfully.
660	T. W.	M.	44 ,,	7	1	3	7	Discrete	Nov. 1	..	25	Infancy	1	..	..
661	J. T. D.	M.	22 ,,	Oct. 8	Oct. 6	Oct. 8	Oct. 8	Discrete modified	Nov. 5	..	28	Infancy	3	..	..
662	A. W.	F.	25 ,,	8	5	6	8	Discrete	Oct. 29	..	21	Infancy	4	..	..
663	R. H. C.	M.	20 ,,	8	5	8	8	Confluent	Nov. 26	..	49	Unvaccinated	..	..	Said to have been vaccinated in 1900, but there is no evidence.
664	A. A.	F.	15 ,,	9	6	8	9	Confluent	Dec. 10	..	62	Unvaccinated	..	..	..
665	T. A.	M.	12 ,,	9	6	8	9	Semi-Confluent	Dec. 3	..	55	Unvaccinated	..	..	..
666	D. A.	M.	8 ,,	9	6	8	9	Confluent	Nov. 26	..	48	Unvaccinated	..	..	..
667	E. A.	F.	4 ,,	9	6	8	9	Semi-Confluent	Dec. 3	..	55	Unvaccinated	..	..	..
668	A. S.	F.	13 ,,	9	7	9	9	Semi-Confluent	Nov. 26	..	48	Unvaccinated	..	..	..
669	P. K.	M.	15 ,,	9	7	8	9	Discrete	Nov. 7	..	29	Infancy	3	..	..
670	J. B.	M.	53 ,,	10	7	9	10	Haemorrhagic	..	Oct. 15	..	Infancy	2	..	..
671	C. C.	F.	14 ,,	10	8	9	10	Confluent	Dec. 31	..	82	Unvaccinated	..	..	“ Boils.” Erysipelas.
672	C. S.	M.	22 ,,	10	8	10	10	Semi-Confluent	Dec. 7	..	58	Unvaccinated	..	..	“ Boils.”
673	J. F.	M.	32 ,,	11	8	10	11	Discrete	Nov. 7	..	27	Infancy	..	..	..
674	M. W.	F.	49 ,,	11	9	11	11	Severe Discrete	Dec. 9	..	59	Infancy	2	..	..
675	E. H.	F.	46 ,,	11	8	11	12	Haemorrhagic	..	Oct. 13	..	Infancy	2	..	Haematuria, Haemoptysis. Haematemisis subconjunctival haemorrhage.
676	W. H. B.	M.	39 ,,	12	9	10	12	Discrete	Nov. 5	..	24	Infancy	2	..	..

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
677	M. J. W.	F.	47 yrs.	1904 Oct. 12	1904 Oct. 9	1904 Oct. 10	1954 Oct. 12	Discrete ..	1904 Nov. 17	1904 ..	36	Infancy ..	2	..	Very small vesicles.
678	W. A. ..	M.	8 „	12	10	11	12	Discrete ..	Nov. 26	..	45	Unvaccinated	..	..	..
679	L. C. ..	F.	2 „	12	..	5	12	Discrete ..	Nov. 5	..	24	Unvaccinated	..	..	Contacts in same house with case 640. Vaccinated Sept. 27 (case 679) and Oct. 1 (case 680)
680	L. C. ..	F.	16 „	12	..	9	12	Discrete ..	Nov. 5	..	24	Unvaccinated	..	..	
681	A. S. ..	M.	12 „	12	Oct. 8	Oct. 10	12	Confluent ..	Dec. 21	..	70	Unvaccinated	..	..	..
682	H. F. ..	M.	15 „	13	10	12	13	Discrete modified	Nov. 7	..	25	Unvaccinated	..	..	Vaccinated after contact with case 651 on Oct. 1.
683	L. F. ..	F.	25 „	13	10	12	13	Discrete modified	Nov. 1	..	19	Unvaccinated	..	..	
684	E. F. ..	M.	20 „	13	10	12	13	Discrete modified	Nov. 7	..	25	Unvaccinated	..	..	
685	J. W. A.	M.	18 „	13	10	12	13	Confluent ..	..	Oct. 20	..	Unvaccinated	..	..	..
686	G. H. W.	M.	4 „	13	11	13	13	Confluent ..	..	Oct. 17	..	Unvaccinated	..	..	..
687	B. J. ..	F.	32 „	13	9	11	13	Discrete ..	Nov. 25	..	43	Infancy ..	2	..	..
688	H. W. ..	M.	31 „	13	10	12	13	Discrete ..	Nov. 11	..	29	Infancy ..	1	..	..
689	E. R. ..	M.	9 „	13	11	13	13	Discrete ..	Dec. 9	..	57	Unvaccinated	..	..	..
690	J. L. ..	M.	9 „	14	11	13	14	Semi-Confluent	1905 Jan. 11	..	89	Unvaccinated	.. 3	..	Broncho-pneumonia.
691	F. P. ..	F.	29 „	14	11	13	14	Discrete ..	1904 Nov. 12	..	29	Infancy ..	2	..	..
692	S. J. A. ..	F.	34 „	14	10	12	14	Discrete ..	Nov. 12	..	29	Infancy ..	2	..	..
693	E. S. ..	F.	40 „	15	12	14	15	Discrete ..	Nov. 17	..	33	Infancy ..	3	..	..
694	H. M. ..	M.	32 „	15	12	14	15	Discrete ..	Nov. 5	..	21	Infancy ..	No record	..	..
695	G. H. ..	M.	22 „	15	12	14	15	Severe discrete..	Nov. 26	..	42	Unvaccinated	..	..	..
696	H. H. ..	M.	50 „	15	13	15	15	Discrete ..	Nov. 3	..	19	Infancy ..	2	..	..
697	A. D. ..	F.	26 „	15	12	14	15	Confluent ..	1905 Jan. 25	..	102	Infancy ..	2	Revacc. Oct 11 04 Rash Oct. 14	Contact same house as case 660 Haemorhage into pustules. Boils and mammary abscesses.
698	M. J. M.	F.	19 „	15	11	14	15	Severe discrete..	1904 Nov. 29	..	45	Unvaccinated	..	..	" Boils."
699	I. A. ..	M.	42 „	15	12	14	15	Discrete ..	Nov. 12	..	28	Infancy ..	No record	..	Violent delirium.
700	E. F. ..	F.	16 „	15	11	13	15	Confluent ..	1905 Jan. 25	..	102	Unvaccinated	..	..	Very severe. "Boils."
701	C. W. ..	F.	19 „	16	15	15	16	Discrete ..	1904 Oct. 27	..	11	Unvaccinated	..	..	Contact same house as case 660. Vacc. Oct.6. Rash Oct. 15
702	R. T. ..	M.	47 „	16	14	16	16	Discrete ..	Nov. 28	..	43	Infancy ..	1	..	..
703	H. B. ..	F.	32 „	17	15	16	17	Discrete ..	Nov. 3	..	17	Infancy ..	..	..	..

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
704	H. E. ..	M.	5 yrs	1904 Oct. 17	1904 Oct. 13	1904 Oct. 15	1904 Oct. 17	Severe discrete ..	1904 Nov. 16	1904 ..	30	Unvaccinated	..	..	..
705	W. W. ..	M.	34 ,,	17	15	17	17	Discrete ..	Nov. 15	..	29	Infancy ..	2	..	..
706	S. A. H...	F.	12 ,,	16	13	15	17	Confluent ..	..	Oct. 24	..	Unvaccinated	..	..	..
707	S. B. ..	F,	34 ,,	17	14	16	17	Discrete ..	Nov. 26	..	40	Infancy ..	1	..	..
708	A. E. T...	F.	24 ,,	17	12	15	17	Discrete ..	Dec. 3	..	47	Infancy ..	..	..	..
709	E. J. ..	F.	29 ,,	18	16	18	18	Discrete ..	Nov. 1	..	14	Infancy ..	3	..	..
710	B. C. ..	M.	23 ,,	18	16	17	18	Semi-Confluent	Dec. 9	..	52	Unvaccinated	..	..	Long standing incontinence of urine. Deformed legs. Old injury to spinal column or healed spina bifida.
711	A. H. ..	M.	26 ,,	18	15	17	18	Discrete ..	Nov. 7	..	20	Infancy ..	1	..	..
712	E. N. ..	M.	18 ,,	18	14	16	18	Discrete ..	Nov. 15	..	28	Unvaccinated	..	..	..
713	A. L. ..	M.	40 ,,	18	15	17	18	Confluent ..	Dec. 10	..	53	Unvaccinated	..	..	Very severe case. Extensive sloughing of skin of feet.
714	J. W. C.	M.	34 ,,	19	18	19	19	Confluent ..	Dec. 5	..	47	Unvaccinated	..	..	..
715	S. C. G.	M.	16 ,,	19	17	18	19	Semi-Confluent	Nov. 25	..	38	Unvaccinated	..	..	..
716	H. H. ..	M.	34 ,,	19	17	19	19	Confluent ..	1905. Jan. 9	..	82	Unvaccinated	..	..	Boils.
717	F. H. ..	F.	36 ,,	19	17	19	19	Discrete ..	1904. Nov. 9	..	21	Infancy	2	..	..
718	M. B. ..	F.	20 ,,	20	16	18	20	Confluent ..	Dec. 21	..	62	Infancy	2	..	Boils.
719	L. E. ..	F.	26 ,	20	16	19	20	Discrete ..	Nov. 9	..	20	Infancy ..	4	..	..
720	A. R. ..	M.	46 ,,	20	16	18	20	Confluent ..	Nov. 29	..	40	Infancy ..	2	..	Abscesses in neck.
721	A. C. ..	F.	31 ,,	20	16	19	20	Discrete ..	Nov. 25	..	36	Infancy ..	3	..	..
722	Not a case. Baby came in with mother—see case 719.														
723	J. H. S.	M.	22 ,,	Oct. 20	Oct. 17	Oct. 19	Oct. 20	Discrete ..	Nov 7	..	18	Infancy ..	3	..	Re-vacctd. Oct 14.
724	E. A. ..	F.	10 ,,	20	18	20	20	Semi-Confluent	Dec. 15	..	56	Unvaccinated	..	..	..
725	V. E. W.	F.	5 ,,	20	16	19	21	Confluent ..	..	Nov. 7	..	Unvaccinated	..	..	Very severe case Lost right eye—Corneal ulcer
726	J. B. ..	F	36 ,,	20	18	20	21	Discrete ..	Nov. 9	..	19	Infancy ..	3	..	..
727	A. B. ..	M.	31 ,,	21	17	20	21	Discrete ..	Nov. 7	..	17	Infancy ..	2	..	..
728	L. B. ..	F.	2mos.	22	19	21	22	Confluent ..	..	Oct. 29	..	Unvaccinated	..	..	..
729	E. B. ..	F.	10 ,,	22	19	21	22	Discrete ..	Nov. 12	..	21	Unvaccinated	..	..	Vacctd. Oct. 10, child of case 639.
730	M. A. D.	F.	4½ ,,	22	19	21	22	Discrete ..	Dec. 10	..	49	Unvaccinated	..	..	..
731	P. T. ..	M.	16 ,,	22	19	21	22	Semi-Confluent	Dec. 10	..	49	Unvaccinated	..	..	Bronchitis.
732	E. M. H.	F.	3 ,,	22	19	21	22	Confluent ..	..	Oct. 30	..	Unvaccinated	..	..	..
733	J. L. ..	M.	16 mos.	22	19	21	22	Discrete mild ..	Dec. 21	..	60	Unvaccinated	..	..	Vacctd. Oct. 24. Small-pox rash very slight on Nov. 6.
734	G. H. C.	M.	7 ,,	23	21	23	24	Discrete mild	Nov. 25	..	32	Infancy ..	2	..	..

Register No.	Name.	Sex.	Age.	Date of Notification.	Date of Onset.	Date of Rash.	Date of Admission to Hospital	Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
735	F. S. ..	M.	36 yrs.	1905 Oct. 22	1904 Oct. 19	1904 Oct. 22	1904 Oct. 24	Discrete ..	1904 Dec. 3	1904 ..	40	Infancy ..	3	Contacts with case 681	Re-vacctd. Oct. 20.
736	M. S. ..	F.	14 ,,	22	19	22	24	Discrete ..	Dec. 3	..	40	Unvaccinated	..		Vacctd. Oct. 20.
737	A. S. ..	F.	4 ,,	22	19	22	24	Discrete ..	Dec. 17	..	54	Unvaccinated	..		Vacctd. Oct. 20.
738	E. S. ..	F.	36 ,,	24	20	23	24	Severe discrete	Dec. 17	..	54	Infancy ..	3		..
739	H. S. ..	M.	15 ,,	24	20	23	24	Severe discrete	Dec. 3	..	40	Unvaccinated	..		Vacctd. Oct. 20.
740	A. S. ..	M.	9 ,,	24	20	23	24	See remarks ..	..	Oct. 26	..	Unvaccinated	..		Oct. 20 Vacctd. Rash never developed properly, very few commencing papules. Child unconscious from admission.
741	H. L. S.	F.	30 ,,	24	19	23	24	Discrete ..	Nov. 20	..	27	Unvaccinated	..	..	..
742	M. J. T.	F.	22 ,,	24	21	23	24	Confluent ..	..	Oct. 31	..	Unvaccinated	..	..	Very severe case. Had severe Asthma and Bronchitis Pregnant 6 mos. Miscarriage. Excessive salivary secretion and acute glossitis.
743	E. B. ..	F.	44 ,,	24	21	23	24	Discrete ..	Nov. 9	..	16	Infancy ..	7 3 on one arm 4 on other		
744	H. S. ..	M.	7 ,,	24	21	24	25	Discrete ..	Nov. 19	..	25	Unvaccinated	..	..	..
745	L. H. ..	F.	17 ,,	25	19	22	25	Discrete ..	Nov. 25	..	31	Unvaccinated	..	..	..
746	H. M. ..	M.	21 ,,	25	24	25	25	Discrete ..	Nov. 29	..	35	Unvaccinated	..	..	Vacctd. Oct. 21.
747	R. A. ..	M.	15 mos.	26	24	25	26	Discrete modified	Nov. 12	..	17	Unvaccinated	..	..	Vacctd. Oct. 15. Child of case 692 Hydrocephalus.
748	M. A. W.	F.	14 yrs.	26	23	25	26	Discrete ..	Nov. 16	..	21	Infancy ..	..	..	Sister of case 686 and a contact.
749	M. A. W.	F.	39 ,,	26	23	25	26	Haemorrhagic	..	Oct. 27	..	Infancy ..	1	..	8 months pregnant. Mother of cases 686 and 748.
750	A. B. ..	M.	23 ,,	26	24	26	26	Discrete ..	Nov. 11	..	16	Infancy ..	2	..	..
751	R. F. ..	M.	11 ,,	27	26	27	27	Discrete ..	Nov. 29	..	33	Unvaccinated	..	..	Vacctd. Oct. 18. Brother and contact of case 700.
752	O. M. H.	F.	16 ,,	27	22	24	27	Severe discrete	1905. Jan. 5	..	70	Unvaccinated	..	..	Small ulcers on legs.
753	B. L. ..	F.	9 ,,	28	26	27	28	Confluent ..	1904. Dec. 15	..	48	Unvaccinated	..	..	..
754	G. E. ..	M.	23 ,,	28	26	28	28	Discrete ..	Nov. 16	..	19	Unvaccinated	..	..	Vacctd. Oct. 18. Father of case 704.
755	J. T. P.	M.	30 ,,	27	22	26	27	Confluent ..	..	Nov. 5	..	Infancy ..	3	..	Very severe.
756	M. R. ..	F.	44 ,,	29	26	28	29	Discrete ..	Nov. 23	..	25	Infancy ..	3	..	..

Register No.	Name.	Sex.	Age.	Date of Notification.	Date of Onset.	Date of Rash.	Date of Admission to Hospital	Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
757	H. H. ..	M.	24 yrs.	1904. Oct. 29	1904. Oct. 27	1904. Oct. 29	1904. Oct. 29	Confluent ..	1904. Dec. 10	1904. ..	42	Unvaccinated	..	..	Violent delirium. Brother of case 695 and of a contact.
758	E. B. ..	F.	12 ,,	29	26	28	29	Confluent ..	Dec. 17	..	49	Unvaccinated	..	..	..
759	A. C. ..	F.	24 ,,	29	27	29	29	Discrete ..	Nov. 23	..	25	Infancy ..	4	..	..
760	S. A. M...	F.	24 ,,	29	26	28	29	Discrete ..	1905. Jan. 23	..	86	Infancy ..	3	..	Pregnant 4 months. Miscarriage. Large slough over sacrum and smaller one over the great trochanter of right femur. Severe intestinal haemorrhage
761	A. D. ..	F.	16 ,,	30	27	29	30	Severe discrete	Jan. 11	..	73	Unvaccinated	..	..	Said to have been vacctd. in June, 1904, but no evidence. Boils.
762	R. H. ..	F.	33 ,,	30	29	30	30	Discrete ..	1904 Nov. 19	..	20	Infancy	4	..	Prodromal rash.
763	J. D. ..	M.	31 ,,	31	27	30	31	Discrete ..	Nov. 29	..	29	Infancy	....	..	..
764	L. R. ..	M.	28 ,,	31	29	30	31	Discrete ..	Dec. 10	..	40	Unvaccinated	..	..	..
765	B. I. ..	F.	22 ,,	31	27	30	31	Discrete ..	Nov. 17	..	17	Infancy ..	3	..	..
766	E. M. D.	F.	9 ,,	31	27	30	31	Confluent ..	1905. Jan. 11	..	72	Unvaccinated	..	..	Very severe case. merging from confluent to haemorrhagic. There were numerous petechial haemorrhages over the hody and legs. Haemorrhage from rectum, vulva, gums and nose, very extensive confluent eruption. Sight of left eye very much impaired by a corneal ulcer. Large and numerous boils.
767	E. T. ..	F	55 ,,	Oct 31	Oct 29	Oct 31	Oct 31	Severe discrete	1904 Dec 23	..	53	Infancy ..	3	..	..
768	E B. ..	F.	27 ,,	31	28	31	31	Discrete ..	Nov. 12	..	12	Infancy ..	5	..	..
769	F. M. B.	F.	2½ ,,	31	29	30	31	Discrete ..	Nov. 23	..	23	Unvaccinated	..	..	Vacctd. Oct. 21. Sister and contact of case 728.

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
				1904	1904	1904	1904		1904	1904					
770	J. G.	F.	22 yrs.	Nov. 1	Oct. 29	Oct. 31	Nov. 1	Severe discrete	Nov. 28	..	27	Infancy	3	..	..
771	S. S.	F.	28 ,,	2	28	Nov. 1	2	Discrete	Nov. 28	..	26	Infancy	4	..	..
772	L. T.	F.	39 ,,	2	30	1	2	Discrete	Nov. 23	..	21	Infancy	2	..	..
773	A. E. R.	F.	24 ,,	2	30	1	2	Semi-Confluent	Dec. 10	..	38	Unvaccinated	..	..	..
774	W. A.	M.	36 ,,	3	28	3	3	Discrete	Nov. 19	..	16	Infancy	2	..	Labourer engaged on laying pipes in Hospital grounds
775	G. D.	M.	18 ,,	4	2	4	4	Discrete modified	Nov. 23	..	19	At 7 years old	3	..	..
776	W. D.	M.	13 ,,	4	2	4	4	Discrete	Dec. 21	..	47	Unvaccinated	..	..	Boils { Five brothers, contacts with their sister, case 730.
777	B. D.	M.	9 ,,	4	2	4	4	Discrete	Dec. 31	..	57	Unvaccinated	..	..	
778	T. D.	M.	5 ,,	4	2	4	4	Discrete	Dec. 15	..	41	Unvaccinated	..	..	
779	H. D.	M.	2 ,,	4	2	4	4	Confluent	Dec. 20	..	46	Unvaccinated	..	..	
780	L. H.	M.	41 ,,	4	2	4	4	Confluent	..	Nov. 15	..	Unvaccinated	..	..	Persistent and exhausting delirium —Alcoholic.
781	A. T.	F.	20 ,,	5	2	5	5	Discrete	Nov. 20	..	15	Infancy	2	..	..
782	E. A. V.	F.	45 ,,	5	3	4	5	Discrete	Dec. 3	..	28	Infancy	2	..	..
783	S. H.	F.	19 ,,	5	2	5	5	Discrete	Dec. 17	..	42	Unvaccinated	..	..	..
784	T. M.	M.	26 ,,	6	2	4	6	Discrete	Nov. 19	..	13	Infancy	3	..	..
785	A. C.	M.	33 ,,	6	2	5	6	Confluent	..	Nov. 12	..	Infancy	4	..	Very severe case. Confluent on face, head, neck, chest, arms, and hands, legs and feet, and most of the back. No portion of the body on which a shilling could be placed without touching a pustule. Violent delirium and very great swelling of head and face.
786	E. M.	M.	39 ,,	Nov. 6	Nov. 3	Nov. 5	Nov. 6	Confluent	..	Nov. 15	..	Infancy	2	..	Haemorrhage into pustules. Violent delirium.
787	J. C.	F.	22 ,,	6	2	5	6	Severe discrete	..	Nov. 26	..	Vaccination doubtful, said to be in infancy, but no marks of the operation	..	..	Pyaemia—Suppurative arthritis in several joints.
788	A. C.	M.	11 ..	6	2	5	6	Severe discrete	Dec. 17	..	41	Unvaccinated	..	..	..

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
789	A. S. ..	F.	30 yrs.	1904 6	1904 3	1904 5	1904 6	Discrete ..	1904 Nov. 19	1904 ..	13	Infancy ..	2	..	Admitted 2 days after confinement. Mother and contact of case 744.
790	W. S. ..	M.	30 ,,	Nov. 6	Nov. 3	Nov. 5	Nov. 6	Confluent ..	..	Nov. 15	..	Doubtful ..	..	..	Father and contact of case 744. Delirium, haemorrhage into pustules. No evidence of vaccination.
791	E. S. ..	M.	2 dys.	..	..	9	6	Confluent ..	..	Nov. 17	..	See remarks	..	..	Child of above. Vaccinated before admission, but developed rash 3 days later—Intra uterine infection.
792	N. N. ..	F.	20 yrs.	7	5	7	7	Discrete ..	Nov. 20	..	13	Infancy ..	4	..	..
793	L. F. ..	F.	39 ,,	7	5	6	7	Semi-Confluent	1905. Jan. 4	..	58	Infancy ..	3	..	Boils.
794	W. S. ..	M.	34 ,,	7	5	6	7	Discrete ..	1904. Nov. 29	..	22	Infancy ..	3	..	Boils.
795	G. W. S.	M.	23 ,,	7	3	6	7	Discrete ..	Nov. 26	..	19	Infancy ..	2	..	..
796	B. S. ..	F.	37 ,,	8	4	6	8	Confluent ..	1904. Jan. 4	..	57	Unvaccinated ..	..	..	Probably infected by child, case 797, who was admitted at same time with rash about 14 days old.
797	L. S. ..	F.	4 ,,	8	..	..	8	Discrete ..	1904. Dec. 1	..	23	Unvaccinated	..	..	Rash 14 days old about
798	J. M. ..	M.	45 ,,	8	Nov. 6	Nov. 8	8	Discrete ..	Nov. 19	..	11	Infancy ..	2	..	..
799	J. C. ..	F.	26 ,,	8	6	8	9	Semi-Confluent	Dec. 17	..	38	Infancy ..	3	..	..
800	S. W. ..	M.	41 ,,	9	5	8	9	Semi-Confluent	Dec. 22	..	43	Unvaccinated	..	..	Husband of case 749.
801	S. N. ..	F.	20 ,,	10	7	10	10	Confluent ..	1905. Jan. 11	..	62	Unvaccinated	..	..	Severe case—Boils.
802	E. A. P.	F.	39 ,,	10	7	9	10	Confluent ..	..	Dec. 4	..	Infancy ..	1	..	..
803	E. A. T...	F.	19 ,,	Nov. 10	Nov. 5	Nov. 7	Nov. 10	Discrete ..	Nov. 25	..	15	Infancy ..	1	..	..
804	K. A. M.	F.	19 ,,	12	7	11	14	Semi-Confluent	Dec. 29	..	45	Unvaccinated	..	..	..
805	A. A. ..	M.	39 ,,	14	..	..	14	Confluent ..	..	Nov. 19	..	Infancy ..	2	..	..
806	M. R. ..	F.	67 ,,	14	..	..	14	Discrete ..	Nov. 26	..	12	Infancy ..	2	..	Rash about 14 days old on admission.
807	N. Mc. A.	M.	15 mos.	12	Nov. 10	Nov. 12	12	Discrete ..	1905 Jan. 23	..	72	Unvaccinated	..	..	Infected by mother, see case 760.
808	E. E. ..	F.	29 yrs.	17	..	16	17	Severe discrete	1904 Dec. 24	..	37	Infancy ..	1	..	..
809	A. B. ..	F.	14 ,,	18	Nov. 15	17	18	Discrete ..	Dec. 23	..	35	Unvaccinated	..	..	..

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
810	E. I. ..	F.	19 yrs.	1904 Nov. 20	1904 Nov. 17	1904 Nov. 19	1904 Nov. 20	Confluent ..	1905 Jan. 9	1904 ..	50	Unvaccinated	..	..	..
811	H. R. ..	M.	24 ,,	13	11	13	13	Discrete ..	1904 Dec. 15	..	32	Unvaccinated	..	..	Brother and contact of case 764.
812	J. S. ..	M.	24 ,,	12	10	12	12	Discrete ..	1905 Jan. 3	..	52	Unvaccinated	..	..	Vacctd. Nov. 3.
813	T. H. ..	M.	19 ,,	12	9	11	12	Discrete ..	1904 Dec. 23	..	41	Unvaccinated	..	..	..
814	F. T. ..	M.	42 ,,	13	10	12	13	Discrete ..	Dec. 12	..	29	Infancy ..	3	..	..
815	H. R. ..	M.	30 ,,	14	11	13	14	Discrete ..	Dec. 22	..	38	Infancy ..	3	..	" Boils."
816	A. A. ..	F.	26 ,,	21	17	21	21	Discrete ..	Dec. 9	..	18	Infancy ..	3	..	..
817	B. L. ..	M.	18 ,,	21	19	21	21	Severe discrete..	1905 Jan. 5	..	45	Unvaccinated	..	..	" Boils."
818	E. R. ..	F.	2 ,,	21	18	21	22	Severe discrete..	Transferrd to Joint Hospital on Feb. 16 1905	..	..	Unvaccinated	..	..	Abscess in right axilla and boils.
819	H. G. ..	M.	44 ,,	23	..	..	23	Discrete ..	1904 Dec. 12	..	19	Doubtful ..	..	..	Rash 14 days old on admission. Said to be vaccinated but no evidence of the operation.
820	E. A. ..	M.	26 ,,	23	Nov. 21	Nov. 23	23	Discrete ..	Dec. 29	..	36	Infancy ..	3	..	..
821	E. C. ..	M.	22 ,,	23	21	23	23	Severe discrete..	1905 Jan. 9	..	47	Infancy ..	2	..	..
822	B. G. ..	M.	22 ,,	24	22	24	24	Discrete ..	1904 Dec. 12	..	18	Infancy ..	3	..	..
823	M. W. ..	M.	30 ,,	24	19	23	24	Confluent ..	..	Nov. 30	..	Infancy ..	2	..	Broncho-pneumonia.
824	A. T. ..	M.	11 ,,	24	22	24	25	Discrete ..	Dec. 23	..	28	Unvaccinated	..	..	Son of case 814 and infected by him.
825	H. S. ..	M.	27 ,,	25	21	23	25	Discrete ..	Dec. 17	..	22	Infancy ..	2	..	..
826	E. A. T...	F.	36 ,,	25	23	25	25	Discrete ..	1905 Feb. 4	..	71	Infancy ..	1	..	Confined 2 days after admission and baby died next day.
827	I. T. ..	F.	2 ,,	25	23	25	25	Discrete ..	Feb. 4	..	71	Unvaccinated	..	..	Abscesses in neck. Remained in hospital with 826, the mother, though recovered.
828	M. E. C.	F.	22 ,,	25	23	25	25	Discrete ..	Jan. 5	..	41	Unvaccinated	..	..	Vaccinated Nov. 21.

Register No.	Name.	Sex.	Age.	Date of				Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				Notification.	Onset.	Rash.	Admission to Hospital								
829	S. E. W.	F.	72 yrs.	1904 Nov. 25	1904 Nov. 20	1904 Nov. 24	1904 Nov. 25	Discrete ..	1904 Dec. 23	1904 ..	28	Doubtful ..	..	..	Said to have been vaccinated in infancy, but there is no evidence.
830	H. C. M.	M.	9 ,,	25	24	25	26	Severe discrete	Dec. 31	..	35	Unvaccinated	..	..	Brother of and infected by case 804.
831	A. N. ..	M.	21 ,,	26	19	26	27	Discrete ..	Dec. 17	..	20	Infancy ..	3	..	..
832	E. C. M.	F.	56 ,,	28	24	28	28	Discrete ..	Dec. 17	..	19	Infancy ..	3	..	..
833	G. W. ..	M.	43 ,,	28	25	27	28	Confluent ..	Dec. 31	..	33	Infancy ..	3	..	Delirium.
834	T. S. ..	M.	27 ,,	29	26	28	29	Discrete ..	Dec. 22	..	23	Infancy ..	2	..	..
835	M. B. ..	F.	13 ,,	30	26	29	30	Discrete ..	1905 Jan. 9	..	40	Unvaccinated	..	..	..
836	J. H. ..	M.	14 ,,	Dec. 5	Dec. 3	Dec. 4	Dec. 5	Severe discrete..	Jan. 18	..	44	Unvaccinated	..	..	Vaccinated Nov. 30.
837	F. C. ..	M.	36 ,,	5	..	..	Dec. 5	Severe discrete..	Jan. 4	..	30	Infancy ..	2	..	Rash several days old
838	W. R. ..	M.	28 ,,	Nov. 13	..	..	Nov. 13	Discrete ..	1904 Dec. 23	..	40	Infancy ..	2	..	Not placed in register at proper date. Entry inserted later
839	W. C. ..	M.	39 ,,	Dec. 6	Dec. 1	Dec. 5	Dec. 6	Discrete ..	Dec. 31	..	25	Infancy ..	3	..	..
840	J. E. D.	M.	18 ,,	Nov. 14	Nov. 10	Nov. 12	Nov. 14	Discrete ..	Nov. 23	..	9	Infancy ..	2	..	Omitted in error from right date.
841	B. L. ..	M.	11 ,,	Dec. 7	Dec. 4	Dec. 6	Dec. 7	Confluent ..	1905 Jan. 19	..	43	Unvaccinated	..	..	"Boils."
842	H. H. L.	F.	23 ,,	7	Nov. 30	Dec. 4	7	Discrete ..	1904 Dec. 23	..	16	Infancy ..	2	..	..
843	J. W. C.	M.	27 ,,	7	Dec. 4	6	7	Severe Discrete	1905 Jan. 28	..	52	Unvaccinated	..	..	"Boils."
844	M. A. H.	F.	30 ,,	8	6	7	8	Semi-Confluent	Jan. 11	..	34	Unvaccinated	..	..	..
845	A. M. ..	F.	5 ,,	9	5	8	9	Discrete ..	Jan. 7	..	29	Unvaccinated	..	..	..
846	S. F. ..	M.	16 ,,	10	8	9	10	Severe discrete..	Jan. 25	..	46	Unvaccinated	..	..	"Boils."
847	S. H. ..	M.	36 ,,	11	..	..	11	Confluent ..	..	Dec. 16	..	Infancy ..	1	..	Restless and violent delirium, persistent hiccough.
848	A. C. ..	F.	59 ,,	12	..	..	12	Discrete ..	Jan. 3	..	22	Infancy ..	5	..	..
849	A. G. R.	M.	30 ,,	13	..	..	13	Semi-Confluent	Jan. 9	..	27	Infancy ..	4	..	Peculiar melancholic type of delirium. Would not speak, nor take food of any description. Fancied he had been brought in to be poisoned.
850	L. N. ..	M.	24 ,,	13	..	..	13	Discrete ..	1904 Dec. 31	..	18	Infancy ..	4	..	Brother and contact of case 831.

Register No.	Name.	Sex.	Age.	Date of Notification.	Date of Onset.	Date of Rash.	Date of Admission to Hospital	Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
				1904.	1904.	1904.	1904.		1905.	1904.					
851	W. C. ..	M.	12 yrs.	Dec. 13	..	..	Dec. 13	Confluent ..	Jan. 28	..	46	Unvaccinated	..	..	" Boils."
852	C. H. ..	M.	34 ,,	13	..	..	13	Severe discrete..	Jan. 13	..	31	Infancy ..	4	..	..
853	B. P. ..	M.	13 ,,	14	..	..	14	Severe discrete..	Jan. 13	..	30	Unvaccinated	..	..	Very severe and prolonged onset. Rash slow in development.
854	F. C. ..	M.	5 ,,	14	..	..	14	Semi-Confluent	Jan. 31	..	48	Unvaccinated	..	..	..
855	H. H. ..	M.	11 ,,	14	..	..	14	Discrete ..	Jan. 7	..	24	Doubtful ..	none	..	Stated to have been vaccinated in infancy, but there were no signs of the operation.
856	W. H. ..	M.	2 ,,	Dec. 14	..	..	Dec. 14	Semi-Confluent	Jan. 13	..	30	Unvaccinated	..	..	..
857	H. L. ..	F.	14 ,,	15	Dec. 14	Dec. 15	15	Discrete ..	Jan. 2	..	18	Infancy ..	3	..	Prodromal rash on admission. Second case from house. Infected by sister, case 843.
858	T. M. ..	M.	12 ,,	Dec. 16	Dec. 14	Dec. 15	Dec. 16	Confluent ..	Jan. 30	..	45	Unvaccinated	..	..	Boils.
859	E. R. ..	F.	6 ,,	16	13	15	16	Discrete ..	Feb. 2	..	48	Unvaccinated	..	..	Vaccinated Dec. 13.
860	G. L. ..	M.	43 ,,	19	..	..	19	Severe discrete..	Jan. 21	..	33	Infancy ..	2	..	Severe conjunctivitis Father of case 857.
861	A. W. ..	F.	51 ,,	21	..	..	21	See remarks ..	Jan. 5	..	15	Infancy ..	2	..	Severe premonitary symptoms and prodromal rash, but no papules. Revacctd. Dec. 13.
862	L. R. ..	F.	11wks.	22	..	..	22	Confluent ..	..	Dec. 27	..	Unvaccinated	..	..	..
863	W. R. ..	M.	37 yrs.	23	..	..	24	Discrete ..	Jan. 11	..	18	Infancy ..	2	..	Revacctd. unsuccessfully Dec. 22. Father of case 862.
864	S. C. ..	F.	32 ,,	24	..	..	24	Discrete ..	Jan. 25	..	32	Infancy ..	4	..	..
865	F. W. ..	M.	25 ,,	25	..	..	25	Severe discrete..	Jan. 28	..	34	Unvaccinated	..	..	..
866	H. B. M.	F.	26 ,,	26	Dec. 23	Dec. 26	26	Severe discrete..	Jan. 12	..	17	Infancy ..	..	..	7 months pregnant. Vesicles dried up very rapidly. Did not abort. Mother of case 847 and infected by this case.
867	J. H. ..	M.	21 ,,	28	..	25	28	Discrete ..	Jan. 19	..	22	Infancy ..	3	..	..
868	W. H. ..	M.	6 ,,	31	Dec. 27	29	31	Semi-Confluent	Feb. 2	..	33	Unvaccinated	..	..	..
				1905.			1905.								
869	C. S. ..	M.	26 ,,	Jan. 1	28	31	Jan. 1	Confluent. ..	Feb. 6	..	36	Infancy ..	3	..	Boils.
870	M. W. ..	F.	29 ,,	1	..	..	1	Discrete ..	Jan. 28	..	27	Infancy ..	1	..	..
871	J. B. ..	F.	40 ,,	13	..	..	13	Discrete ..	Jan. 30	..	17	Infancy ..	2	..	..

Register No.	Name.	Sex.	Age.	Date of Notification.	Date of Onset.	Date of Rash.	Date of Admission to Hospital	Type of Attack.	Date of Discharge.	Date of Death.	Days in Hospital.	Date of Vaccination.	Number of Marks.	Re-Vaccination.	Remarks.
872	J. W. ..	M.	4 yrs.	1905. Jan. 13	1904. ..	1904. ..	1905. Jan. 13	Confluent ..	1905. ..	1905. Jan. 20	..	Infancy ..	1	..	One very small and faint vaccination mark on right arm about 1/16 in. in area and showing no foveation.
873	A. B. ..	M.	14 ,,	13	..	..	13	Discrete ..	Feb. 2	..	20	Unvaccinated	..	..	..
874	N. R. ..	F.	17 ,,	15	Jan. 11	Jan. 13	15	Confluent ..	..	Jan. 21	..	Unvaccinated	..	..	Very severe. Very extensive rash.
875	M J. M...	F.	35 ,,	16	..	..	16	Discrete ..	Feb. 11	..	26	Infancy ..	2	..	Rash several days old on admission.
876	W. W. ..	M.	43 ,,	17	Jan. 16	Jan. 17	17	Confluent ..	Transferred to Joint Hospital, Feb. 16	..	..	Infancy ..	2	..	Very violent delirium. Suppuration around elbow joint and abscess on extensor surface of forearm—long and deep sinuses formed—Otitis media.
877	E. W. ..	F.	20 ,,	Jan. 29	Jan. 27	29	29	Confluent ..	..	Feb. 7	..	Unvaccinated	..	..	Very severe case. Very excitable and nervous girl. Hyperpyrexia. Very severe acute glossitis. Tongue an enormous size and quite purple in colour. Some oedema of glottis.
878	T. B. ..	M.	57 ,,	31	..	..	31	Confluent ..	Transferred to Joint Hospital Feb. 16	..	..	Infancy ..	2	..	Rash 5 or 6 days old on admission.

The first case of small-pox of the late epidemic was admitted to the Ravenswharf Hospital on February 11th, 1904, and the last three cases remaining in the Hospital were transferred on February 16th, 1905, to the Mitchell-Laithes Hospital. During this period—practically one year—635* cases came under treatment; 563 were discharged cured and 72 ended fatally.

These figures give a case mortality of 11.33 per cent. (The last two cases occurring in Dewsbury were removed to Mitchell Laithes and are not included in these figures; both of them recovered). Of the 635 cases, 343 were males and 292 were females, giving a case mortality for males of 13.11 per cent. and for females of 9.24 per cent. (45 deaths occurring amongst males and 27 amongst females.) It will thus be seen that the male sex not only accounted for the larger number of cases, but also had a considerably higher death-rate.

From the foregoing detailed list of cases, the following tables have been compiled.

It will be noticed that at the time when the number of cases admitted to Hospital was greatest, the severity in type of the disease was also greatest, and the mortality was heaviest proportionately. Naturally at this period overcrowding of the Hospital was pronounced. If the preliminary account of the Hospital be referred to, it will be found that on October 31st only one of the new wings was available, and consequently on that date there was accommodation for not more than 40 persons (giving each patient the full allowance of air space). But there were on this day, 128 persons under treatment at the Hospital, in addition to those at the Moor House Convalescent Home. The greatest number of cases admitted during one day was 17, on September 22nd.

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* This figure includes cases admitted from other districts.

TABLE XXX.—*Giving the fortnightly incidence of cases of small-pox, with the types of attack and deaths.*

Fortnightly Periods.	TYPE OF DISEASE.					Total Cases.	Total Deaths.
	Haemorrhagic.	Confluent.	Semi Confluent.	Discrete.	Indeterminate.		
1904							
Feb. 11-24	..	..	1	1	..	2	..
Feb. 25-March 3 ..	..	1	..	3	..	4	..
March 4-17	..	..	..	1	..	1	1
March 18-31	..	2	2	7	..	11	..
April 1-14	..	4	4	10	..	18	1
April 15-28	..	1	2	29	..	32	..
April 29-May 5 ..	..	2	1	13	..	16	..
May 6-19	..	1	2	13	..	16	..
May 20-June 2 ..	..	2	2	3	..	7	1
June 3-16	..	..	..	7	..	7	1
June 17-30	..	3	..	5	..	8	..
July 1-14	..	2	2	1	..	5	2
July 15-28	..	8	2	10	..	20	3
July 29-Aug. 11 ..	1	12	3	7	..	23	3
Aug. 12-25	1	12	3	19	..	35	6
Aug. 26-Sept. 8 ..	1	24	21	49	..	95	3
Sept. 9-22	2	12	12	43	..	69	9
Sept. 23-Oct. 6 ..	..	6	6	36	..	48	14
Oct. 7-20	2	15	8	39	..	64	5
Oct. 21-Nov. 3 ..	1	9	2	37	1	50	6
Nov. 4-17	..	10	4	27	..	41	8
Nov. 18-Dec. 1 ..	..	3	..	19	..	22	3
Dec. 2-15	..	3	4	13	..	20	1
Dec. 16-29	..	2	..	8	..	10	2
1904-1905.							
Dec. 30-Jan. 12 ..	..	1	1	1	..	3	..
Jan. 13-26	..	3	..	3	..	6	2
Jan. 27-Feb. 9 ..	..	2	..	..	..	2	1
TOTALS ..	8	140	82	404	1	635	72

TABLE XXXI.—*Number of patients admitted, discharged, died, and remaining in Hospital,* 1904-5, *and average weekly number under treatment.*

Week ending.	Admitted.	Discharged.	Died.	Average weekly number under treatment.
1904.				
February 13 ..	1	..	..	1
20 ..	..	..	..	1
27 ..	2	..	..	2.2
March 5 ..	3	..	..	5
12 ..	1	..	..	7
19 ..	..	3	1	5.1
26 ..	..	..	..	3
April 2 ..	12	3	..	8.1
9 ..	10	..	..	18

TABLE XXXI.—*Continued.*

Week ending.	Admitted.	Discharged.	Died.	Average weekly number under treatment.
April 16	11	..	1	27.6
23	12	5	..	38
30	23	..	..	53.3
May 7	10	9	..	65.3
14	9	7	..	67
21	8	15	..	65.3
28	2	17	..	53.6
June 4	3	9	1	41.6
11	7	5	1	37.5
18	3	10	..	34.6
25	3	11	..	29.1
July 2	3	5	..	21.4
9	4	7	2	21
16	..	4	..	13.6
23	16	2	..	19.2
30	6	..	4	27.3
August 6	7	8	..	25.3
13	18	1	..	33.1
20	20	4	4	52.6
27	22	1	3	60.3
September 3	46	10	2	88.1
10	41	13	3	125.3
17	21	29	5	118.1
24	57	27	5	133
October 1	30	6	11	149.3
8	10	17	2	151.3
15	37	24	1	155.2
22	32	22	3	160.6
29	27	22	5	165.6
November 5	24	28	2	165
12	24	30	3	157.3
19	10	23	5	144
26	16	32	2	123
December 3	5	35	1	101.6
10	11	21	1	80
17	14	18	1	73.3
24	5	19	..	61.2
31	5	9	1	53.3
1905.				
January 7	2	12	..	43.1
14	3	16	..	29
21	3	4	1	25.5
28	..	10	1	17.3
February 4	2	8	..	9.4
11	..	1	1	4.2
16	..	3*	..	3

The above table does not exactly agree with the rest of the tables in this report, because it includes every person admitted to Hospital, and in several instances, infants in arms came in with their mothers—and *vice versa*—although not themselves suffering from small-pox. These persons have of course been eliminated in compiling the other tables.

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* Removed to Mitchell Laithes Hospital.

TABLE XXXII.—*Type of attack and age.*

Age Period.	Haemorrhagic.		Confluent.		Semi-Confluent.		Discrete.		Indeterminate.		Total.		Death Rate %.
	Cases	D'ths	Cases	D'ths	Cases	D'ths	Cases	D'ths	Cases	D'ths	Cases	D'ths	
Un. 1 yr.	..	..	4	4	2	2	3	1	..	..	9	7	77.7
1-2 yrs.	..	..	..	..	..	..	4	..	..	..	4	..	Nil.
2-3 ,,	..	..	3	..	3	..	8	..	..	..	14	..	Nil.
3-4 ,,	..	..	1	1	..	..	2	..	..	..	3	1	33.3
4-5 ,,	..	..	5	4	1	..	9	..	..	..	15	4	26.6
5-10 ,,	..	..	16	3	16	..	34	..	1	1	67	4	5.97
10-15 ,,	1	1	20	4	16	..	42	..	..	..	79	5	6.32
15-20 ,,	..	..	25	7	15	..	47	..	..	..	87	7	8.04
20-25 ,,	..	..	16	3	11	1	52	1	..	..	79	5	6.32
25-30 ,,	1	1	12	7	4	..	49	..	..	..	66	8	12.12
30-40 ,,	2	2	20	15	7	..	86	1	..	..	115	18	15.65
40-50 ,,	2	2	12	4	6	1	48	..	..	..	68	7	10.29
50 on.	2	2	6	4	1	..	20	..	..	..	29	6	20.68
Totals	8	8	140	56	82	4	404	3	1	1	635	72	11.33
Death rate	100%		40%		4.87%		.74%		100%		11.33%		

In classifying the types of disease, I have only included four types, the discrete cases have not been sub-divided into mild and severe, owing to the lack of information in many of the earlier cases. The one indeterminate case died before a definite type could be assigned to it.

The above table shows the number of cases occurring in different age periods, and also the type of attack and death rate for each age period.

The mortality amongst the children under one year of age is, as is usually the case in small-pox, very high. Three of these children were under one month old, and in each case the attack proved fatal. One child was born in Hospital and lived less than 24 hours; this has not been included in the list of cases, as it had not developed small-pox.

From this table it will be seen that the number of children attacked is not so great as might have been expected, and this is a fortunate circumstance, for two reasons, firstly because the mortality amongst the very young is usually very high, and secondly, the relative scarcity of cases amongst the children means that small-pox never got a hold in the schools, a very fortunate circumstance, if the well-known experience of Gloucester be borne in mind.

The age period showing the most attacks is that from 30-40 years, because the effect of infantile vaccination has to a great extent worn away. This point is referred to in considering a later table. It will be noticed that the death rate is highest in those under ten years of age, the rate again rising after the age of 25 years.

TABLE XXXIII.—*Haemorrhagic small-pox.*

Age Period.	Vaccinated.		Doubtful Vaccination.		Unvaccinated.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year ..	..	..	..	..	..	..
1-2 years ..	..	..	..	..	..	..
2-3 ,, ..	..	..	..	..	..	..
3-4 ,, ..	..	..	..	..	..	..
4-5 ,, ..	..	..	..	..	..	..
5-10 ,, ..	..	..	..	..	..	..
10-15 ,, ..	..	..	..	..	1	1
15-20 ,, ..	..	..	..	..	..	..
20-25 ,, ..	..	..	..	..	..	..
25-30 ,, ..	..	..	..	..	1	1
30-40 ,, ..	1	1	..	..	1	1
40-50 ,, ..	1	1	..	..	1	1
50 yrs. onwards	2	2	..	..	..	..
	4	4	Nil.	Nil.	4	4
Death Rate 100 %						

This—the most severe—type of small-pox is almost always inevitably fatal, and the eight cases shown in this table had all a fatal termination. I have included one case amongst the confluent class, which might almost have been included in this group, but although possessing almost all the features of a haemorrhagic attack, it was not entirely one of that type. The patient in this instance, made a remarkable recovery.

It will be seen that four of the cases were unvaccinated and four vaccinated. All the latter cases were over the age of 30 years, when the effect of infantile vaccination has to a great extent worn out.

TABLE XXXIV.—*Confluent small-pox.*

Age Period.	Vaccinated.		Doubtful Vaccination.		Unvaccinated.		Death Rate %
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Under 1 year ..	..	..	..	..	4	4	100
1-2 ,, ...	..	..	..	..	..	..	..
2-3 ,, ...	..	..	..	..	3	..	Nil.
3-4 ,, ...	..	..	..	..	1	1	100
4-5 ,, ...	1*	1*	..	..	4	3	80
5-10 ,, ...	..	..	..	..	16	3	18.75
10-15 ,, ...	1	..	..	..	19	4	20
15-20 ,, ...	..	..	1	..	24	7	28
20-25 ,, ...	2	..	..	..	14	3	18.75
25-30 ,, ...	2	..	..	..	10	7	58.3
30-40 ,, ...	9	9	1	1	10	5	75
40-50 ,, ...	7	..	1	1	4	3	33.3
50 years onward ..	6	4	..	..	..	..	66.6
TOTALS ..	28	14	3	2	109	40	40
Death rate ..	50%		66.6%		36.69%		
Death rate for confluent small-pox, 40 per cent.							

Confluent small-pox, though not so fatal a type as the preceding one, nevertheless is usually so severe as to cause a death rate of close upon 50 per cent., and the cases in this epidemic give a heavy death rate. As might be expected by far the greatest number of cases occur in the unvaccinated class. Those occurring in the vaccinated class, with two exceptions, occur after the age of twenty years. The case in the age group 4-5 years was one of a child showing one very small mark about $\frac{1}{16}$th of a square inch in area and with practically no foveation.

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* Case of a child aged four years possessing one small cicatrix $\frac{1}{16}$th of a square inch in area, and showing practically no foveation. The almost entire absence of foveation lends strength to the belief that the cicatrix was the result of sepsis rather than of vaccinia. The mother states that she insisted on only having one mark made.

The age group 30-40 gives a very high death rate among both the vaccinated and the unvaccinated. The reason for this is because many of the patients in this age group were rather intemperate persons, and after the age of 30 years, intemperate habits are likely to have left their mark. A large proportion of the cases in this age group suffered from violent delirium, more marked than that usually met with in persons of non-alcoholic tendencies.

The cases classed as doubtfully vaccinated are all persons who were alleged to have been vaccinated in infancy, but after very careful examination, no trace whatever could be found of the operation ever having been performed.

TABLE XXXV.—*Semi-confluent small-pox.*

Age Period.	Vaccinated.		Doubtful Vaccination.		Unvaccinated.		Death Rate %
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Under 1 year ..	..	..	..	..	2	2	100
1-2 years ..	..	..	..	..	..	..	..
2-3 ,, ...	..	..	..	..	3	..	Nil.
3-4 ,, ...	..	..	..	..	..	..	..
4-5 ,, ...	..	..	..	..	1	..	Nil.
5-10 ,, ...	..	..	..	..	16	..	,,
10-15 ,, ...	2	..	..	..	14	..	,,
15-20 ,, ...	..	..	1	..	14	..	,,
20-25 ,, ...	3	..	..	..	8	1	9.09
25-30 ,, ...	3	..	..	..	1	..	Nil.
30-40 ,, ...	4	..	..	..	3	..	,,
40-50 ,, ...	3	..	..	..	3	1	16.6
50 years onwards ..	..	..	..	..	1	..	Nil.
TOTALS ..	15	..	1	..	66	4	4.87
Death rate ..	Nil.		Nil.		6.06%		

The unvaccinated again largely predominate in this type of the disease, and the deaths all occurred in the non-protected class. The fatality of the disease even in its milder forms when infants are attacked is again shown. In the vaccinated class, in which there were no deaths, all the cases occurred after the age of 10 years,

TABLE XXXVI.—*Discrete small-pox.*

Age Period.	Vaccinated.		Doubtful Vaccination.		Unvaccinated.		Death Rate %
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Under 1 year	..	..	..	..	3	1	33.33
1-2 years	..	..	..	..	4	..	Nil.
2-3 ,,	..	..	..	..	8	..	,,
3-4 ,,	..	..	..	..	2	..	,,
4-5 ,,	..	..	..	..	9	..	,,
5-10 ,,	2	..	..	..	32	..	,,
10-15 ,,	6	..	2	..	34	..	,,
15-20 ,,	20	..	..	..	27	..	,,
20-25 ,,	37	..	1	1	14	..	1.92
25-30 ,,	40	..	..	..	9	..	Nil.
30-40 ,,	79	..	..	..	7	1	1.16
40-50 ,,	46	..	1	..	1	..	Nil.
50 years onwards	18	..	1	..	1	..	Nil.
TOTALS	248	..	5	1	151	2	0.74
Death rate	Nil.		20%		1.32%		
Total death rate, 0.74 per cent.							

This, the mildest form of small-pox, accounted for nearly two-thirds of the total cases, and it is always the largest class. The reason for this is because many persons who have been vaccinated in infancy and in whom the effect has not entirely worn out, are thereby to some extent protected, and if attacked only develop a mild attack of the disease. It will be noticed that by far the largest proportion of the cases in the vaccinated class have passed the age of 20 years.

If the other types of the disease be studied, it will be noticed that, with the exception of the haemorrhagic group, which, however, only contains 8 cases, the unvaccinated very largely predominate, but in this the mildest form, the vaccinated persons form the largest class. This fact alone ought to form some inducement to persons to take advantage of the benefits of vaccination.

TABLE XXXVII.—*Showing number of cases and deaths at several age periods in the vaccinated and unvaccinated classes.*

Age Period.	Vaccinated.			Doubtful Vaccination.			Unvaccinated.		
	Cases	D'ths	Death Rate %	Cases	D'ths	Death Rate %	Cases	D'ths	Death Rate %
Under 1 year ..	..	..	..	..	..	..	9	7	77.7
1-2 years ..	..	..	..	..	..	..	4	..	..
2-3 ,, ..	..	..	..	..	..	..	14	..	..
3-4 ,, ..	..	..	..	..	..	..	3	1	33.3
4-5 ,, ..	*1	*1	100	..	..	..	14	3	26.6
5-10 ,, ..	2	..	..	..	..	..	65	4	5.9
10-15 ,, ..	9	..	..	2	..	..	68	5	6.32
15-20 ,, ..	20	..	..	2	..	..	65	7	7.04
20-25 ,, ..	42	..	..	1	1	100	36	4	6.32
25-30 ,, ..	45	..	..	..	..	..	21	8	12.12
30-40 ,, ..	93	10	10.75	1	1	100	21	7	15.65
40-50 ,, ..	57	1	1.75	2	1	50	9	5	10.29
50 years onward	26	6	23.07	1	..	..	2	..	20.68
TOTALS ..	295	18	6.10	9	3	33.3	331	51	15.40

From the above table it will be seen that with the exception of one case, no person under the age of 30 years who was vaccinated died. It is not till after this age that we begin to find deaths amongst the vaccinated. If the number of deaths amongst the vaccinated before the age of 30 years be compared with the deaths amongst the unvaccinated in the same period, the value of vaccination is very clearly seen—the result is 1 to 39, figures which surely speak for themselves.

The doubtfully vaccinated cases as before stated showed no signs of vaccination ever having been performed, and might rightly be classed with the unvaccinated—but I have in no case taken them into consideration in comparing vaccinated with unvaccinated. A glance at this table at once suggests the thought that re-vaccination should be performed as soon after 10 years of age as possible, for before that age properly vaccinated cases are practically a negligible quantity. Should it be thought right to count the doubtfully vaccinated class among the vaccinated, the combined death rate of these two classes is 6.9 per cent., contrasted with 15.4 among the unvaccinated. Lest it should be said that the question of the efficacy of vaccination is being begged, by allotting cases to the " doubtful " class, it might be as well to state that including such doubtful cases, as vaccinated, the contrast between the vaccinated and unvaccinated classes remains as striking as before.

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* See footnote to Table XXXIV.

TABLE XXXVIII.—*Showing attacks of small-pox in children under the age of* 15 *years, with the type of disease and state of vaccination.*

Type of Disease.	Vaccinated.		Doubtful Vaccination.		Unvaccinated.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Haemorrhagic ..	..	..	..	..	1	1
Confluent ..	2	1*	..	..	47	15
Semi-confluent..	2	..	..	..	36	2
Discrete ..	8	..	2	..	92	1
Indeterminate ..	..	..	..	..	1	1
TOTALS ..	12	1	2	..	177	20
Death rate ..	8.3%†		Nil.		11.29%	

Total cases .. 191.
Total deaths .. 21.
Total death rate .. 10.9.

The above table gives the particulars of cases under the age of 15 years—practically the infant and school ages. Here one again notices the effect of the neglect of vaccination. No fewer than 177 cases of small-pox occurred, the vast majority of which could have been prevented by the simple expedient of vaccination. Twenty deaths occurred which could have been entirely prevented had the parents only seen that their children were protected by the operation of vaccination *efficiently performed.* The first footnote to the table points a moral lesson to people who do not take the full advantage

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[*] See footnote to Table XXXIV.

[†] This rate being calculated on only 12 cases, forms, from the statistical point of view an untrustworthy comparison with the unvaccinated death rate. Including the doubtfully vaccinated cases as vaccinated, the rate sinks to 7.1 per cent.

of what is offered to them. Had this child been efficiently vaccinated and had the four marks as prescribed by the Local Government Board been made, I have no doubt this child would not only not have died, but would not have contracted the disease.

There were a considerable number of children and infants who, though not themselves suffering from the disease, were admitted to the Hospital because the houses they lived in had to be closed owing to the parents being stricken with small-pox, or because the mother could not leave her infant at home ; these children were efficiently vaccinated and never in any single case did they show the slightest trace of small-pox, and yet they were daily in contact with and living amongst persons suffering from the disease, often in its most severe forms, and in all stages.

Facts such as these require no explanation, and the inestimable value of efficient vaccination is by them very clearly proved. Looking again at this table it will be seen that eight of the twelve vaccinated cases were of the mildest type, whilst of the unvaccinated cases, 85 out of 177 were of the severest type, that is practically one half.

TABLE XXXIX.—*Showing the severity of attack according to the state of vaccination, and also the case mortality for each type of vaccination.*

State of Vaccination.		Number of Cases.	Mild.	Severe.	Number of Deaths.	Death Rate %
Unvaccinated		331	151	180	51	15.4
Stated to be vaccinated, but showing no marks		9	4	5	3	33.33
Vaccinated	One cicatrix	38	32	6	6	10.52
	Two cicatrices	112	84	28	9	8.03
	Three ,,	96	79	17	3	3.12
	Four or more ,,	38	33	5	2	5.26
	Number not recorded	11	9	2	Nil.	..
TOTALS		635	392	243	72	11.33

This table shows conclusively the value of vaccination, this value increasing to all practical purposes with the degree of efficiency attained in the performance of the operation. The contrast between one and two mark vaccination and three and four mark vaccination as shown by the death rates of the several classes is noteworthy.

In the first place more than half the cases occurred in unvaccinated persons, and practically three-quarters of the severe cases occurred in this class and also practically five-sevenths of the deaths.

The death rate shows a diminution almost in direct proportion to the number of cicatrices of vaccination.

If Table XXXVII. be consulted, it will be seen that the number of cases do not begin to be large amongst the vaccinated until after the age of 20 years, when the effect of infantile vaccination has very frequently to a large extent become nullified and revaccination is then required in order to confer that immunity which is the valuable asset of children properly vaccinated in infancy.

The result of the foolish practice of mothers practically forcing the vaccinator to put on only one or two marks is well shown in Table XXXIX., for it will be seen that the more efficient the vaccination the greater the protection. This table also shows that when those who have been attacked have been previously vaccinated, the type of disease in their case is more frequently only of a mild type.

In conclusion, one criticism of these figures ought to be refuted in advance. It is not sufficient to point to one or two isolated figures and to hold that because these figures point in a certain direction, then the whole question of vaccination or anti-vaccination is settled once and for all. The maxim that figures can be made to prove anything really means that figures improperly used can be made to prove anything. For statistical purposes small groups of figures are untrustworthy, and it is only by taking a wide view of all the evidence and tables submitted that conclusions of any value can be arrived at. When this wide survey is taken there can be no reasonable doubt that belief in the extraordinary protective power of vaccination against small-pox is once more amply vindicated.

A word of praise and thanks is due to the staff of nurses, who worked under great difficulties in a very whole-hearted manner. Though hampered by lack of nursing facilities, they achieved excellent results.

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